

USSR

BURNEYKA, K. P., et al., Radiotekhnika i Elektronika, Vol XVI, No 4, 1971,  
pp 561-564

calculated values as a function of a variety of parameters: voltage on the next to the last resonator, width of the output gap for various amplitudes of the high-frequency field in the gap with optimal phase, for various phases with optimal amplitude, and for optimal phase and amplitude.

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1/2 038

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--GROUPING OF ELECTRONS IN A KLYSTRON BY USING A NONLINEAR WAVE  
PROCESS --U-

AUTHOR--(02)--BURNEYKA, K.P., KANAVETS, V.I. *B*

COUNTRY OF INFO--USSR

SOURCE--RADIOELEKTRONIKA, VOL. 8, MAR. 1970, P. 370-376

DATE PUBLISHED--70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--KLYSTRON, ELECTRON CAPTURE, COULOMB FIELD, ELECTROMAGNETIC  
WAVE GENERATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--2000/0154

STEP NO--UR/0452/70/008/000/0370/0376

CIRC ACCESSION NO--AP0123925

UNCLASSIFIED

2/2 038

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123925

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL ANALYSIS OF THE EFFECT OF COULOMB FORCES ON THE PROPERTIES OF THE ELECTRON ARRANGEMENT IN A THREE RESONATOR TRANSITTYPE KLYSTRON, USING A SEQUENCE OF CHARGED DISKS AS THE ELECTRON BEAM MODEL AND ASSUMING THAT THE VARIABLE ELECTRON BEAM VELOCITY COMPONENT IS SMALL. SELECTION OF THE PARAMETERS OF THE SPATIAL CHARGE IS CARRIED OUT FOR THE OPTIMIZATION OF ELECTRON BUNCHING IN TWO AND THREE RESONATOR KLYSTRONS. IT IS SHOWN THAT THE MAXIMUM FIRST HARMONIC AMPLITUDE AT THE BUNCHER OUTPUT IS OBTAINED WHEN THE LENGTH OF THE INITIAL SECTION OF DRIFT IS GREATER THAN THE OPTIMAL LENGTH OF THE BUNCHER. THE ESSENTIAL ROLE OF THE EXCITATION OF FINITE AMPLITUDE WAVES IN THE ELECTRON BEAM SPATIAL CHARGE FOR KLYSTRON PERFORMANCE OPTIMIZATION IS NOTED. IT IS FOUND THAT A POTENTIAL JUMP CAN IMPROVE ELECTRON BUNCHING ONLY WHEN THE KLYSTRON PARAMETERS ARE NOT OPTIMAL.

UNCLASSIFIED

USSR

UDC 621.385.632

B  
• BURNEYKA, K. P., KANAVETS, V.I., NI, N.P., SANDALOV, A.N.

"Investigation Of A Two-Sectioned Frequency Multiplier Based On A TWT"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 6, pp 31-39 (from RZh--Elektronika i yeye primeneniye, No 10, October 1970, Abstract No 10A161)

Translation: A two-sectioned frequency multiplier based on a TWT is investigated. Multifrequency nonlinear one-dimensional TWT theory is used for theoretical analysis. The effect is considered of the Coulomb forces and the difference of potentials between sections, on the processes in the device. The choice is considered of an optimum regime corresponding to the maximum value of the conversion factor of the frequency. A comparison of the theoretical and experimental results shows that to a large degree optimization depends on the space charge parameter. Long lived clusters are generated in an optimum regime. In that case an effective strengthening of the high-frequency field of the harmonics occurs in the output section. The parameters of the multiplier are improved by the introduction of a change of potentials.

Summary.

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USSR

UDC 621.385.632

B  
BURNIYKA, K.F., GRIGORENKO, L.P., KANAVETS, V.I.

"Investigation Of TWT Frequency Converter With Pre-Modulation By Electron Beam"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 5, pp 73-81 (from RZh--Elektronika i yeye primeneniye, No 8, August 1970, Abstract No 8A147)

Translation: A two-sectioned combination frequency converter is investigated, which incorporates a klystron electron buncher and an inherent TWT frequency converter. During the theoretical consideration, a discrete model of the electron flow was used and waves of four frequencies were taken into account. The results of the calculation were found to be in accordance with the results of an investigation of an experimental model. Summary.

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USSR

UDC 621.385.623

B  
BURNEYKA, K. P., KANAVETS, V. I.

"Influence of Space Charge on Electron Bunching in a Two-Resonator Klystron With a Finite Transit Angle in the Gap"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 2, pp 26-32 (from RZh--Elektronika i yeye primeneniye, No 7, July 1970, Abstract No 7A131)

Translation: The effect is theoretically investigated of the space charge on electron bunching in the drift region with modulation of the beam by the resonator field with a finite transit angle in the gap, and also with assignment of the initial rate of modulation at the frequency of the signal, and at double the frequency. A disk model of the beam is investigated. The results of the investigation are compared with the results of kinematic theory. Graphs are presented of the dependence of the amplitude of the first harmonic of the current and the qualitative index on the system parameters. 5 ref. Summary.

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USSR

UDC 627.81:551.48(47+57)

BURNEYKIS, Yu. P.

"Study of the Possibilities of Regulation and Use of the River Runoff of the Lithuanian SSR (1965-1966)"

Izuch. i ispol'z vodn. resursov SSSR. 1966-1967 -- V sb. (Study and Use of USSR River Resources. 1966-1967 -- Collection of Works), Moscow, Nauka Press, 1970, p 75 (from RZh-Elektrotehnika i Energetika, No 2, Feb 71, Abstract No 2 D21)

Translation: The integral topographic characteristics of river valleys of the Lithuanian SSR, the data on possible reservoir volumes and specific flooding are presented as a function of the backwater level. The topographic characteristics of river valleys are constructed for Lithuanian rivers the watershed area of which is 50 km<sup>2</sup>. A procedure for calculating the seasonal regulation of the river runoff in the Lithuanian SSR is discussed.

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USSR

UDC 620.172.254.05

BURNOS, V. A., TSVIKOVICH, S. I., SOLOMADINA, YE. A., and YANKOVSKIY, V. M.,  
All-Union Scientific Research and Engineering Design Institute of the Pipe  
Industry, Dnepropetrovsk

"Attachment for Tensile Testing Metals At Fast Strain Rates"

Moscow, Zavodskaya Laboratoriya, Vol 39, No 6, Jun 73, pp 755-756

Abstract: A special attachment has been developed at the All-Union Scientific Research and Engineering Institute of the Pipe Industry which when fitted to a K-117-Ye eccentric press allows tensile testing to be conducted at increased strain rates. Samples of steels 10, 20, 45, 30KhGSA, and 1Kh18Ni9Ti were tested using the new attachment and the results compared against tests conducted according to GOST 9651-61. The experimental strain rate was  $20 \text{ s}^{-1}$  as compared to GOST 9651-61 with a strain rate of  $0.005 \text{ s}^{-1}$ . No conclusions are given. A diagram of the unit is provided in the text. 1 figure, 1 table, 4 bibliographic references.

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USSR

UDC 620.172.251.2

BURNOS, V. A., TSVIKEVICH, S. I., YANKOVSKIY, V. M., and  
KRIVOSHEYEVA, A. A. (All-Union Scientific Research Institute of  
Pipe Industry)

"On the Determination of Mechanical Properties at High Tempera-  
tures"

Moscow, Zavodskaya Laboratoriya, Vol 36, No 11, pp 1401-1402

Abstract: A description is given of a system of high rate heating and loading of samples with deformation speed close to that used in tube rolling in cases when mechanical tests are being made. A schematic diagram of the experimental setup is presented. An automatic control circuit for loading of samples was developed. The dimensions of samples after deformation were taken as initial dimensions for calculating the strength and plasticity characteristics. The stress variation was accomplished by a dynamometer provided with strain gages and recorded on an N-700 oscillograph. The obtained oscillograms make it possible to calculate the yield point and instantaneous  
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USSR

BURNOS, V. A., et al., Zavodskaya Laboratoriya, Vol 36, No 11,  
pp 1401-1402

strength with sufficient accuracy. It is stated that his method  
was used for the study of the effect of heating and deforma-  
tion rate on properties of pipe construction steel.

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BURNIAKOV, L. I. *198*

UDC 621.039.554:621.311.25:621.039

JPRS 55882

4 May 1972

STUDY OF THE BUILDUP OF PLUTONIUM ISOTOPES IN THE FUEL OF THE  
VER-1 REACTOR OF THE NOVO-VORONEZHSKIY ATOMIC POWER STATION

Article by: Ya. Gabel'shteyn, V. S. Belokopylov, G. A. Miller, G. A. Smaklin, L. I. Bumpalay, Z. I. Fokhmov, Yu. A. Vladimirova, and L. V. Matyashchuk, Scientific Research Institute of Atomic Reactors, Nelekaess (Isadomenergiya) and Ya. Izolovoy Plutoniya v tselnyy Reaktor VVR-1, Novozakomernyye A.M., Russian, MIK P-66, 1970, printing 220 copies, signed to press January 1972, 16 pp]

## Introduction

The isotopic composition of irradiated fuel in samples cut from fuel elements of the VVER-1 reactor to determine experimentally the isotopic composition of irradiated fuel in a reactor of the VVER type within the framework of contract no. 577/PB with the International Atomic Energy Agency. The tasks of this study were:

(a) determining the uranium and plutonium isotopic composition after irradiation of the fuel;

(b) determining the number of plutonium isotopes formed as a result of irradiation;

(c) determining the isotopic composition of the fuel as a function of the degree of burn-up.

## 1. Preparation of Samples

The assembly from which the fuel element was taken was irradiated for 2.75 years and held for 1.5 years before the investigation.

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UDC: 51

BURNYSHEVA, A. N., GRINENKO, B. A., ZALOZNYKH, N. N.

"Optimizing the Hardware of an Automatic Control System by the Method of Statistical Modeling"

V sb. Vopr. tekhn. i inform. obespecheniya ASU (Problems of Hardware and Software for Automatic Control Systems---collection of works), Novosibirsk, 1971, pp 38-47 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V466)

[No abstract]

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1/2 010 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--STRUCTURAL STUDY OF RARE EARTH ELEMENT TANTALATES -U-  
AUTHOR--(03)-ROMASHOV, V.M., TIMOFEYEVA, N.I., BUROBINA, L.N.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(3), 511-14  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--RARE EARTH COMPOUND, TANTALUM COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1996/0837 STEP NO--UR/0363/70/006/003/0511/0514  
CIRC ACCESSION NO--AP0118013  
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118013

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STRUCTURE OF TANTALATES OF THE TYPE RTAO SUB4, R SUB3 TAO SUB7, AND RTA SUB3 O SUB9 OF ALL RARE EARTH METALS WITH THE EXCEPTION OF CE, PM, AND Y, SYNTHESIZED BY HIGH TEMP. ANNEALING AND MELTING OF MIXTS. OF THE OXIDES, WAS INVESTIGATED. THE RTAO SUB4 (WHERE R EQUALS RAREEARTH ELEMENTS RANGING FROM ND TO LU, AND Y) HAVE A MONOCLINIC FERGUSONITE TYPE STRUCTURE. THE RTA SUB3 O SUB9 HAVE A PEROVSKITE TYPE STRUCTURE, BEING TETRAGONAL FOR COMPS. RANGING FROM LA TO SM, ORTHORHOMBIC FOR COMPS. OF EU AND GD, AND MONOCLINIC FOR COMPS. OF RARE EARTH ELEMENTS WITH TB TO YB. COMPS. OF THE R SUB3 TAO SUB7 TYPE (WHERE 4 EQUALS RARE EARTH ELEMENTS RANGING FROM SM TO LU, AND Y) HAVE A CUBIC PYROCHLORE TYPE STRUCTURE.

UNCLASSIFIED

USSR

UDC 621.373.826

AKIMOV, YU. A., ~~BUROV, A. A.~~, GOVORKOV, O. I., KRYUKOV, I. V., RODICHENKO, G. V.,  
STEPANOV, B. N.

"KGP-1M Semiconductor Quantum Generator with Electron Excitation"

V sb. Ispol'z. optich. kvant. generatorov v sovren. tekhn. i med. Ch. 2-3  
(Utilization of Lasers in Modern Engineering and Medicine. Parts 2-3--collection of works), Leningrad, 1971, pp 15-20 (from RZh-Radiotekhnika, No 1, 1972, Abstract No 1D376)

Translation: The KGP-1M laser designed for generation of a series of radiation pulses with the interferometric and shadow methods of investigating the optical inhomogeneities is described. The basic characteristics of the laser are as follows: The radiation pulse duration is 10 nanoseconds to 1 microsecond, the repetition rate is 100 hertz to 1 hertz, the radiation power is 100 watts to 1 watt. When operating in the pulse mode, the packet repetition rate is 100 hertz, the number of pulses per packet is 20-30, the pulse repetition rate in the packet is 100 megahertz to 1 gigahertz, the duration of the light pulses is 1-0.1 nanoseconds, and the radiation power per pulse is 100 watts. As the working medium of the semiconductor target, n-type gallium arsenide alloyed with Te is used with an impurity concentration of  $1-3 \cdot 10^{18} \text{ cm}^{-3}$ . At the temperature of liquid nitrogen,  $\lambda = 0.084-0.86$  microns. There are 4 illustrations and a 3-entry bibliography.

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USSR

UDC 621.3 + 662.66

SHUMKINA, A. S., and BUROV, A. N.

"Analysis of Electrical Energy Demand for Coal Production in the Kazakh SSR"

Nauchn. Tr. Karagandinsk. n.-i. ugol'n. in-t. (Scientific Works of the Karagandinsk Coal Scientific Research Institute), 1969, vyp. 32, pp 100-104 (from RZh-Teploenergetika, No 5, May 70, Abstract No 5G1)

Translation: In the last ten years the overall industrial demand for electrical power in the Kazakh SSR has increased by about 2.5 times; the same figure applies to electrical requirements for coal production. However, the expanded rate of power use in coal production is considered inadequate in terms of the general productivity growth. Formulas are given which relate labor productivity indices to their corresponding electrical utilization. Five tables are included.

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USSR

UDC [537.226+537.311.33]:[537+535]

VERZHBITSKIY, F. R., VASILEVSKAYA, M. M., BUROV, G. V., and SMIRNOV, M. V.

"High-Frequency Noncontact Study of Temperature Dependence of Electrical Properties of Ionic Crystals"

Tr. In-ta elektrokhimii. Ural'sk. nauch. tsentr AN SSSR (Works of Electrochemistry Institute, Ural Scientific Center of Academy of Sciences USSR), 1971, vyp. 17, pp 7-10 (from RZh-Fizika, No 1, Jan 72, Abstract No 1YE1226 from summary)

Translation: The authors study the electrical properties of NaCl, KCl, CsCl, KBr, and KI crystals by the noncontact HF method. It is established that on the curve for the temperature dependence of the tangent of the angle of dielectric loss in the crystals studied there is a maximum near the melting points. In the case of CsCl a maximum is found also in the region of polymorphous  $\alpha \rightarrow \beta$  transformation at 475° C. The presence of a maximum on the  $\tan \delta$  curve is due to mutually opposed processes: an increase in the concentration of defects and a decrease in their mobility. The  $\tan \delta$  temperature dependence can be regarded as characteristic of temperature variations in the structure of ionic crystals.

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USSR

UDC 536.421.4+536.421.1

SMIRNOV, M. V., VASILEVSKAYA, A. A., and BURDOL, G. V.

"Investigating the Structure and Characteristics of Ionic Crystals Near the Melting Point"

V sb. Kristallizatsiya i faz. prevrashcheniya (Crystallization and Phase Transformations--collection of works) Minsk, "Nauka i tekhn." 1971, pp 27-33 (from RZh-Fizika, No. 9, 1971, Abstract No. 9E372)

Translation: The results are given of an investigation into the change in volume, the lattice parameter, and the structure of NaCl and KCl crystals. It is established that the relative thermal expansion of these crystals increases sharply before the melting point, reaching 14-15%. Roentgenographic and pycnometric data on the relative expansion permitted the conclusion that at high temperatures, the formation of Frenkel defects may be prevalent in Na and K chlorides. New reflection planes in NaCl and KCl crystals at temperatures beyond 5-15° until their melting points are caused by the ordered arrangement of cations introduced into the internodes in the matrix of the fundamental lattice, satisfactorily described by two tetragonal lattices. The assumption is made that the groupings which occur at high temperatures in the crystal, surrounding its four anions, go into the melt to form the quasi-complexes  $\text{NaCl}_4^{2-}$ . Author's abstract

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USSR

UDC 669.28.018.45

SAVITSKIY, Ye. M., BUROV, I. V., ZABOLOTNYY, V. T.

"Change in Temperature Dependence of Gas Liberation of Molybdenum and Yttrium of Various Degrees of Purity in a Superhigh Vacuum"

Elektron. Tekhnika. Nauchno-Tekhn. Sb. Materialy [Electronic Engineering, Scientific and Technical Collection, Materials], 1970, No. 5, pp. 122-124.  
(Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 1769 from the resume).

Translation: A method is developed for studying the gas liberation of metals and alloys heated in a vacuum of  $10^{-9}$  mm Hg with recording of the gases separated by means of a mass spectrometer. The spectra of gases liberated when Mo and Y of various degrees of purity are heated are studied. It is established that the gas liberation of Mo purified by zone refining in a vacuum is significantly lower for H, C, N, and O, than the liberation of metal ceramic Mo. 2 biblio refs.

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USSR

UDC 669-172:541.12.03

SAVITSKIY, Ye. M., BUROV, I. V., LITVAN, L. N., BURKHANOV, G. S., and BOKAREVA, N. N.

"Work Function of Single Crystals of Molybdenum-Niobium System Alloys on (111) Face in a Vacuum"

Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystals of Refractory and Rare Metals -- Collection of Works], Nauka Press, 1971, pp 74-77

Translation: The work function of single crystals of the molybdenum-niobium system of alloys on the (111) face is measured in a vacuum of  $10^{-9}$  torr throughout the entire range of concentrations. Using a thermo-emission projector, an emission picture is produced for the alloy Mo + 42% Nb, and anisotropy is established similar to that produced for pure metals with a BCC lattice. The experimental results produced with single crystals of the alloys confirmed the general nature of the monotonous change in emission properties in solid solutions of binary equilibrium systems both for polycrystals and for single crystals. In performing measurements with single crystals, a change was noted in the fine structure of the alloys, influencing their emission properties. 2 Tables; 2 Figures; 11 Bibliographic References.

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USSR

UDC 669-172:541.12.03

SAVITSKIY, Ye. M., BUROV, I. V., LITVAK, L. N., POLYAKOVA, V. P., and KHORLIN, Ye. M.

"Thermo-Emission Properties of Iridium Single Crystals"

Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystals of Refractory and Rare Metals -- Collection of Works], Nauka Press, 1971, pp 81-85

Translation: Certain thermo-emission characteristics of an iridium single crystal are reproduced in a vacuum of  $10^{-9}$  torr, grown by the method of zone refining by an electron beam. A thermo-emission image of iridium is produced in a Martin projector. The brightness of luminescence indicates the following order of increasing work function for various faces: (311)-(110)-(100)-(111). It is established that the iridium does not change its emission picture with changing residual gas pressure in the  $10^{-5}$ - $10^{-8}$  torr interval. An instrument with flat geometry is used to determine the work function on the (100) and (110) faces. The following values are produced for full current: for the (100) face at  $1,900^{\circ}\text{K}$ ,  $\phi = 5.37 \pm 0.05$  ev, for the (110) face at  $1,900^{\circ}\text{K}$ ,  $\phi = 4.83 \pm 0.05$  ev. The Richardson work functions correspondingly are  $\phi_{(100)} = 5.50 \pm 0.05$  ev,  $\phi_{(110)} = 4.85 \pm 0.05$  ev.

7 Figures; 10 Bibliographic References.

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USSR

UDC 537.312.5

SAVITSKIY, Ye. M., PIROGOVA, S. V., and BUROV, I. V.

"Calculated and Experimental Values of Electrical Conductivity of Single Crystals of Alloys in the Molybdenum-Niobium and Tungsten-Tantalum Systems at 4.2°K"

Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystals of Refractory and Rare Metals — Collection of Works], Nauka Press, 1971, pp 89-94

Translation: The electrical conductivity of alloys in the molybdenum-niobium and tungsten-tantalum systems are calculated near absolute zero on the assumption that the Fermi surface area of the alloys is an order of magnitude less than for the spherical Fermi surface, while the transverse scattering cross section is equal to  $2\pi (\sqrt{2}\Lambda_F)^2$ , where  $\Lambda_F$  is the wavelength of a conductivity electron at the Fermi level. The electrical conductivity of monocrystalline alloys in the molybdenum-niobium and tungsten-tantalum systems is measured at 293, 77, and 4.2°K throughout the entire concentration interval. The calculated and experimental values of electrical conductivity of 4.2°K are in good agreement. 4 Tables; 5 Figures; 14 Biblio. Refs.

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USSR

UDC: 535.37

SEVCHENKO, A. N., Academician of the Academy of Sciences of the BSSR,  
BUROV, L. I., VOROPAY, Ye. S., ZHOLNEREVICH, I. I., SARZHEVSKIY, A. M.,  
Belorussian State University imeni V. I. Lenin

"Polarization Curves of Fluorescence Induced by Two-Photon Excitation"

Minsk, Doklady Akademii Nauk SSSR, Vol 17, No 2, 1973, pp 117-120

Abstract: An expression is derived for the degree of polarization of fluorescence in the case of excitation by two linearly polarized light beams with arbitrarily oriented polarization vectors. The resultant expression can be used not only to calculate the degree of polarization of fluorescence for different orientations of the wave vectors and the vectors of polarization of the exciting fluxes but also to obtain information on the states participating in two photon absorption. Expressions are tabulated for the degree of fluorescence polarization as a function of the angle between the polarization vectors of the incident light beams with oblique recording of fluorescence. Polarization curves plotted from the expressions can give an idea of the kinds of oscillators taking part in processes of absorption and emission.

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USSR

UDC 577.1:615.7/9

BABANOV, G. P., ISAKHANOV, A. L., BUROV, YU. A., SKOBEY, N. A., BABANOV, A. G.  
and SAVRASOVA, L. I.

"Formation of the Adaptation of the Organism Under the Effect of Nitrile'  
Acrylate as a Low-Intensity Factor of the Production Environment"

V sb. Toksikol. i ghyena produktov neftekhimii i neftekhim. proiz-v (Toxicology  
and Hygiene of the Products of Petrochemistry and the Petrochemical Production  
-- collection of works), Yaroslavl', 1972, pp 45-58 (from RZh-Biologicheskaya  
Khimiya, No 8, 1973, Abstract No 8F2171)

Translation: Rats were forced to inhale nitrile acrylate for 6 months (I;  
 $0.495 \pm 0.01 \text{ mg/m}^3$ , 5 hours a day, 6 days a week). The I treatment caused some  
increase in the number of erythrocytes in the blood (more expressed only  
during the first month of treatment) and a reduction in the number of leuco-  
cytes (more expressed after 4-5 months), an increase in the total amount of  
protein in the blood serum as a result of albumen and from the second half of  
the effect of I -- gamma-globulins -- an increase in the free SH-group content  
in the liver (during the initial period of the treatment) and to a lesser  
degree in the blood serum and a reduction in the ascorbic acid content in the  
blood serum and also some increase in the activity of the blood peroxydase and  
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BABANOV, G. P., et al., Toxicology and Hygiene of the Products of Petrochemistry and the Petrochemical Production -- collection of works, Yaroslavl', 1972, pp 45-58

catalase. In the second half of the treatment, the changed indexes increased to the initial level. The treatment with I caused increase resistance to the animals to the effect of extremal factors (temperature drops --  $+5^{\circ}$ , 10 minutes; reduced  $O_2$  partial pressure, ethanol narcosis -- 3 g/kg, intraperitoneal). Under the acute effect of I ( $183 \text{ mg/m}^3$ , 2 hours) the changes in the majority of investigated indexes were insignificant. The conclusion was drawn regarding development of adaptation of the organism under the effect of low I concentrations.

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Pharmacology and Toxicology

USSR

UDC 615.214.2.015:612.825.1-019

BUROV, Yu. V. and SPERANSKAYA, N. P., Institute of Pharmacology, USSR Academy of Medical Sciences, Moscow

"Effect of Psychotropic Agents on One Form of Intraspecies Behavior"

Moscow, Farmakologiya i Toksikologiya, No 3, 1973, pp 266-268

Abstract: The effect of different groups of psychotropic agents (chlorpromazine, haloperidol, benactyzine, librium, amphetamine, butyrophenone, mepro-bamate, etc.) on the avoidance reaction of rats was studied in experiments where one group of animals ("viewers") given the tranquilizers were allowed to watch other animals ("victims") receive an electric shock. Benactyzine, mepro-bamate, and librium inhibited the avoidance reaction in relatively low doses but had virtually no effect on the conditioned defense reflex, while neuroleptics of the phenothiazine series (chlorpromazine, trifluoperazine) inhibited both reflexes in the same doses. In contrast, butyrophenone intensified the reaction of the "viewers" to the behavior of the "victims."

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USSR

UDC 615.214.2.015.4:599.742.7-151

BUROV, Yu. V., and ZHUKOV, V. N., Laboratory of Nervous System Pharmacology,  
Institute of Pharmacology, Academy of Medical Sciences USSR, Moscow

"The Effects of Psychotropic Agents on Aggressive Behavior in Cats"

Moscow, *Farmakologiya i Toksikologiya*, Vol 36, No 2, 1973, pp 143-146

Abstract: The effects of chlorpromazine (I), trifluoperazine (II), haloperidol (III), meprobamate (IV), benactyzine (V), chlordiazepoxide (VI), and morphine (VII) were evaluated on two types of aggressive behavior in cats. In one situation fed, adult, cats were permitted to attack and kill white mice; this type of aggressive behavior did not have an emotional component (hunching, piloerection, hissing). In the other situation the cats lunged at dogs at a distance of 0.5 m as a defensive measure; in this situation a definite emotional component was present in the form of hunching, hissing, and piloerection. The drugs were administered intraperitoneally 1 h before experiments were conducted. In the cat-mouse system, I-IV and VII partially or completely alleviated the aggressive action either by prolonging the latent period (which in the controls was practically zero), or by evidence of disinterest. I-III were administered in doses of 1-4 mg/kg, IV was given in a dose of 60-80 mg/kg, and VII at a dose of 2-4 mg/kg. V and VI had no effect on the aggressiveness of cats in 1/2

USSR

BUROV, Yu. V. and ZHUKOV, V. N., Farmakologiya i Toksikologiya, Vol 36, No 2, 1973, pp 143-146

this system. In the cat-dog system the aggressiveness of cats and the emotional component were decreased by I (2 mg/kg), II (2 mg/kg), III (1-2 mg/kg), and VII (2 mg/kg). IV (60-80 mg/kg), V (1.5-3 mg/kg) and VI (10 mg/kg) were without effect. With the exception of IV in the cat-mouse test, the tranquilizers did not alter the aggressive behavior of cats, irrespective of whether an emotional component was involved or not.

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USSR

UDC 615.78

EUROV, Yu. V., Institute of Pharmacology, Academy of Medical Sciences USSR,  
Moscow

"Effect of Neurotropic Agents on the Aggressive Reaction Evoked by Electrical  
Stimulation of the Hypothalamus"

Moscow, Zhurnal Vysshey Nervnoy Deyatel'nosti, No 5, 1972, pp 1,019-1,023

Abstract: Chlorpromazine (3 mg/kg), trifluoperazine (3 mg/kg), haloperidol (3 mg/kg), imipramine (12.5 mg/kg), and meprobanate (60 mg/kg) prevented cats from attacking rats following threshold stimulation of the hypothalamus which normally evokes an aggressive reaction in cats. The tranquilizers benactyzine (3 mg/kg), chlordiazepoxide (10 mg/kg), and morphine (3 mg/kg), on the other hand, did not have this effect. The inhibitory action of the phenothiazine derivatives (chlorpromazine and trifluoperazine) and antidepressant imipramine on cat hostility to rats is related to the depressing effect of these compounds on the amygdaloid complex which facilitates aggressive reactions.

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Pharmacology and Toxicology

USSR

UDC 615.217.32.015.2:615.214

BUROV, Yu. V., and KUROCHKIN, I. G., Laboratory of the Pharmacology of the Nervous System, Institute of Pharmacology, Academy of Medical Sciences USSR

"The Effect of Psychotropic Drugs on the Emotional Behavior of Cats Upon Injection of Acetylcholine into the Central Gray Matter"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 12, 1971, pp 48-51

Abstract: Injection of acetylcholine into the central gray matter of cats resulted in pendulum-like movements of the tail, salivation, dyspnea, growling, and other manifestations of hostility by the animals. The EEG was characterized by desynchronization in the cortex and reticular formation and bursts of high-amplitude activity in the amygdala. Large doses of chlorpromazine (6 mg/kg) or trifluoperazine (4 mg/kg) intensified the reaction while smaller doses (4 and 0.75 mg/kg, respectively) mitigated it. Haloperidol (4 mg/kg) increased the latent period of the reaction significantly and shortened its duration almost three-fold. Librium (5 to 10 mg/kg) and meprobamate (30 to 60 mg/kg) had no effect. Benactyzine (3 mg/kg) and atropine (2 mg/kg) increased the latent period of the reaction three-fold but did not alter its duration. The EEG picture was variously modified by the different psychotropic drugs.

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BUROV, Yu. V.

JPRS 56019  
17 May 72  
UDC: 615.015:001.0

METHODOLOGICAL ISSUES IN PHARMACOLOGY

[Article by V.V. Zolotarev, N.K. Barkov, Yu.V. Burav (Moscow); Moscow, Voenik Akademii Meditsinskikh Nauk SSSR, Russian, No 3, 1972, pp 76-82]

In modern times, the only effective methodology of science is materialistic dialectics. Since dialectical materialism discloses the overall patterns of the world, these patterns also extend over medical science.

Specific, special laws are a manifestation of generalities under concrete conditions, and generality, in turn, is manifested via specific patterns. The thesis of dialectical materialism on the universal relationship between phenomena must necessarily be taken into consideration when analyzing medical problems. Of course, when considering specific phenomena, one has to artificially abstract them from certain links. But ultimately, an overall (complex) analysis is required to avoid unilateral judgments. For example, in the course of pharmacological investigation of new chemical compounds, the researcher obtains information about their different types of activity. Each type of activity, individually, would point different (and often contradictory, in relation to other properties) determination of the specifics in the action of the preparation. However, the set of data obtained permits more precise evaluation of the nature of action of a substance and identification thereof as being in a specific group of pharmacological agents. V.I. Lenin indicated that as he moves up from the concrete to the abstract, the hypothesis does not disappear from truth (if the abstract is correct), he comes closer to it, since all serious abstractions reflect nature more deeply.

A fact is the reflection of some aspect of a subject [object] or phenomenon in man's consciousness. This means that the fact has a subjective component too, and that one should avoid a simple pursuit of the "logic of facts." Very often, investigators evaluate differently the same fact (for example, the same investigative method or set of properties of a drug). Dialectical materialism, however, is the method that allows the investigator to be properly oriented in different, even contradictory, facts, and to find the true link between them.

The principle of complementarity introduced by Bohr is very important in gaining knowledge of basically new phenomena; i.e. the use of mutually

USSR

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BUROV, Yu. V., Laboratory of Nervous System Pharmacology, Institute of Pharmacology, Academy of Medical Sciences USSR

"Manifestations of the Threat and Flight Reactions to Electrical Stimulation of the Anterior Hypothalamus of a Cat Following the Administration of Psychotropic Agents"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 5, 1970, pp 66-69

Abstract: In experiments on cats, injection of chlorpromazine, triftazin (trifluoroperazine), ethaperazine, haloperidol, imizin, or meprobamate inhibited the motor elements of the threat and flight reactions (except raising the head). Sympathetic effects (mydriasis and piloerection) induced by electrical stimulation of the region of the anterior hypothalamus and paraventricular nucleus were also inhibited. Amizil and librium sharply raised the threshold of electrical stimulation for the threat reaction, while halperidol completely blocked the flight reaction. Since morphine dilated the pupils in all the animals but had no appreciable effect on the threat and flight reactions, the latter were not elicited by pain.

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1/2 019 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--THE MANIFESTATION OF REACTIONS OF THREAT AND FLIGHT INDUCED BY  
ELECTRIC STIMULATION OF THE ANTERIOR HYPOTHALAMUS OF CATS AGAINST THE  
AUTHOR--BUROV, YU.V.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UNDER STUDY WAS THE INFLUENCE OF CHLORPROMAZINE (1-8 MG-KG), TRIFLUOPERAZINE (1-4 MG-KG), PERPHENAZINE (1-5 MG-KG), HALOPERIDOL (1-4 MG-KG), IMIPRAMINE (1-10 MG-KG), MEPROBAMATE (80-100 MG-KG), BENACTIZDINE (0.5-3 MG-KG), CHLORDIAZEPOXIDE (1-10 MG-KG) AND MORPHINE (1-6 MG-KG) IN THREAT AND FLIGHT INDUCED BY ELECTRIC STIMULATION OF THE REGION OF THE ANTERIOR HYPOTHALAMUS AND PARAVENTRICULAR NUCLEUS. BENACTIZINE (3 MG-KG) AND CHLORDIAZEPOXIDE (10 MG-KG) SIGNIFICANTLY INCREASE THE THRESHOLD OF ELECTRIC STIMULATION FOR THE THREAT REACTION. HALOPERIDOL (4 MG-KG) COMPLETELY BLOCKED THE FLIGHT REACTION. IN MARKED INCREASE OF STIMULI, SUPERIMPOSED ON THE EFFECT OF HALOPERIDOL INSTEAD OF THE REACTION OF FLIGHT THERE WERE EVOKED COMPONENTS OF THE REACTION TO THREAT, GROWLING AND HISSING. ALL THE DRUGS, WITH THE EXCEPTION OF MORPHINE, INHIBITED VEGETATIVE COMPONENTS OF THREAT AND FLIGHT REACTIONS. FACILITY: INSTITUTE OF PHARMACOLOGY OF THE ACADEMY OF MEDICAL SCIENCES OF THE USSR MOSCOW.

UNCLASSIFIED

USSR

B 531.737

BUROVA, L. L.

"Methods of Artificial Aging of Manganin Resistance Manometers"

Tr. Metrol. In-Tov SSSR, Vyp. 104(164), [Works of Metrological Institutes of USSR, No 104(164)], pp 44-52 (translated from Referativnyy Zhurnal Metrologiya I Izmeritel'naya Tekhnika, No. 4, 1970, Abstract No. 4.32.740, from the resume)

Translation: An investigation is presented of two methods of high temperature treatment of manganin resistance manometers (vacuum annealing and annealing under pressure) in order to determine their influence on the metrological characteristics of manometers. The experimental results are presented from an investigation of coils aged by these methods. The temperature area of stable operation of manometers, values of their piezo and thermal coefficients are determined, and preliminary conclusions are drawn concerning the optimal method of treatment. Eight illustrations, five tables, three biblio. refs.

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USSR

UDC 632.95

BUROVA, M. S., KUKALENKO, S. S., SAKADYNSKIY, K. I., ROSTOVTSEVA, YE. YE.,  
MALYSHEV, A. I.

"Study of the Halogenation of  $\alpha$ -Epichlorhydrine"

V sb. Khim. sredstva zashchity rast. (Chemical Means of Plant Protection --  
collection of works), No 1, Moscow, 1970, pp 263-269 (from RZh-Khimiya, No 12,  
Jun 72, Abstract No 12N415)

Translation: During chlorination of  $\alpha$ -epichlorhydrine (I),  $\beta$ , $\gamma$ -dichlorohydrine,  
 $\alpha$ ,  $\alpha'$ ,  $\alpha'$ -trichloracetone and  $\alpha$ ,  $\alpha'$ ,  $\alpha'$ -trichlorisopropyl alcohol are formed.  
During bromination of I,  $\alpha$ , $\gamma$ -chlorobromohydrine is isolated as the primary  
product. The process of halogenation of I in the presence of scattered light  
and cooling, with heating and ultraviolet or radiation was investigated. A  $Cl_2$   
current flows into 207 grams of I at a rate of 0.2-0.4 liters/min at 10-15°;  
after 84 hours the HCl and  $Cl_2$  are blown off the solution, and it is fraction-  
ated. Then 82.5 grams of  $Br_2$  are added dropwise to 48 grams of I heated to 90-  
100°, and kept at 100° for 5 hours and the HBr is blown off and fractionated by  
gas chromatography.

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UDC 632.95

KULAKENKO, S. S. and BUROVA, M. S.

"Reaction of Aliphatic and Aryloxyalkyl Carboxylic Acid Chlorides with Epichlorhydrin"

V sb. Khim. sredstva zashchity rast. (Chemical Protection of Plants -- collection of works), No 2, Moscow, 1972, pp 226-231 (from RZh - Khimiya, No 22, 25 Nov 73, Abstract No 22N579 by V. A. Kozlov)

Translation: Compounds with the general formula  $\text{RCOOCH}(\text{CH}_2\text{Cl})_2$  (I) and  $\text{R}'\text{COOCH}_2\text{CH}(\text{OH})\text{CH}_2\text{Cl}$  (II) ( $\text{R} = \text{C}_1 - \text{C}_3$ -alkyl, Ph,  $\text{PhOCH}_2$ , alkyl- or phenoxyethyl halide,  $\text{R}' = \text{PhOCH}_2$ , alkyl- or phenoxyalkyl halide) are obtained by heating  $\text{ClCH}_2\text{CHCH}_2\text{O}$  (III) with  $\text{RCCl}$  (IV) or  $\text{R}'\text{COOH}$  (V), respectively. Examples.  
 (1) 0.13 mole of IV ( $\text{R} = \text{Et}$ ) and 0.5 ml of AcOH are added to 0.13 mole of III at  $70-71^\circ$  and the mixture is kept for 10 hours at  $90-100^\circ$  and distilled in a vacuum to obtain I ( $\text{R} = \text{Et}$ ), yield 45.7%, boiling point  $93-4\frac{1}{2}/2$ ,  $d_4^{20}$  1.2158,  $n_D^{20}$  1.4520.  
 I ( $\text{R} = 4\text{-ClC}_6\text{H}_4\text{OCH}_2$ ) (Ia) is obtained in a similar manner after heating to  $100-110^\circ$  for 20 hours. Purification is carried out by chromatography through a column with  $\text{Al}_2\text{O}_3$ , yield of Ia 46%, boiling point  $152-3^\circ$ . I is obtained in a similar

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(Chemical Protection of Plants -- collection of works), No 2, pp 226-231

manner (R, yield in %, boiling point in °C/mm or boiling point in °C,  $d_4^{20}$ ,  $n_D^{20}$  are given: Me, 68.9, 150-2/19, 1.2461, 1.4480; Pr, 75.2, 96-8/15, 1.1763, 1.4508; Ph, 30.8, 160-6/15, 1.2766, 1.5332;  $\text{PhOCH}_2$ , 42.9, 173-210/1, 1.3032, 1.5242; 2,4- $\text{Cl}_2\text{C}_6\text{H}_3\text{OCH}_2$ , 21.7, —, 1.4484, 1.5448; 2,4,5- $\text{Cl}_2\text{C}_6\text{H}_2\text{OCH}_2$ , 55.6, 160-1; 2-Me-4- $\text{Cl}-\text{C}_6\text{H}_3\text{OCH}_2$ , 53.8, 111-2; 2-Me- $\text{C}_6\text{H}_4\text{OCH}_2$ , 59.4, —, 1.2655, 1.5221; 2,4,5- $\text{Cl}_3\text{C}_6\text{H}_2\text{OCHMe}$ , 65.1, —, 1.4138, 1.5446. (2) A mixture of 0.35 mole of II, 0.07 mole of V ( $\text{R}' = 2,4,5-\text{Cl}_3\text{C}_6\text{H}_2\text{OCHMe}$ ), 0.06 g of NaOH, and 2.5 ml of water is heated to 70° for 15 hours, dissolved in 250 ml of ether, washed with water, 5%  $\text{Na}_2\text{CO}_3$  solution, and water, dried over  $\text{Na}_2\text{SO}_4$ ; the solvent is distilled off to obtain II ( $\text{R}' = 2,4,5-\text{Cl}_3\text{C}_6\text{H}_2\text{OCHMe}$ ), yield 85%,  $n_D^{20}$ , 1.5513. II is obtained in a similar manner (R, yield in %,  $n_D^{20}$  are given):  $\text{PhOCH}_2$ , 83, boiling point 65-60°; 2,4- $\text{Cl}_2\text{C}_6\text{H}_3\text{OCH}_2$ , 85, 1.5475; 2-Me-4- $\text{ClC}_6\text{H}_3\text{OCH}_2$ , 85, 1.5338; 2,4,5- $\text{Cl}_3\text{C}_6\text{H}_2\text{OCH}_2$ , 80, 1.5672; 2-Me-4- $\text{ClC}_6\text{H}_3\text{H}_2\text{O}(\text{CH}_2)_3$ , 84, 1.5299; 4- $\text{FC}_6\text{H}_4\text{O}(\text{CH}_2)_3$ , 60, 1.5127. I and II possess herbicidal and defoliating activity.

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USSR

UDC 632.95

KUKALENKO, S. S., BUROVA, M. S., KARGAPOLOVA, F. V.

"Reaction of Chlorohydrin Ethers With Amines, Phenols, Thiophenols, and Carboxylic Acids"

V sb. Khim. sredstva zashchity rast. (Chemical Means of Plant Protection -- collection of works), vyp. 1, Moscow, 1970, pp 256-262 (from RZh-Khimiya, No 12, Jun 72, Abstract No 12N474)

Translation: In searching for pesticides, ordinary methods were used to synthesize derivatives of chlorohydrin with the general formulas:  $RXCH_2CH(OH)CH_2Cl$  (I),  $RXCH_2CH(OH)CH_2NR'R''$  (II),  $RXCH_2CH(OOCR''')CH_2Cl$  (III)  $RXCH_2CHClCH_2Cl$  (IV) (everywhere R is Ph, substituted Ph, R' and R'' = H, C<sub>1</sub>-C<sub>8</sub>-alkyl, Ph, substituted Ph; R''' = C<sub>1</sub>-C<sub>3</sub>-alkyl, halogen; X = O, S). A mixture of 128.5 grams of p-chlorophenol, 92.5 grams of freshly redistilled epichlorohydrin and 1 ml of 40% aqueous solution of NaOH is heated in a boiling water bath for 15 hours, generating 150.32 grams of I (R = 4-ClC<sub>6</sub>H<sub>4</sub>, X = O) (Ia), C<sub>9</sub>H<sub>10</sub>Cl<sub>2</sub>O<sub>2</sub>, yield 40%, boiling point 131-2°/2, n<sub>D</sub><sup>20</sup> 1.5513, d<sub>4</sub><sup>20</sup> 1.3202. I (X = S) is obtained analogously,

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but with heating of the reaction mixture for 6 hours at 115-120°. The I are obtained (R, X, the molecular formula, the yield in %, the boiling point in °C/mm or the melting point in °C,  $n_D^{20}$ ,  $d_4^{20}$  are given): 2-ClC<sub>6</sub>H<sub>4</sub>, O, C<sub>9</sub>H<sub>10</sub>Cl<sub>2</sub>O<sub>2</sub>, 50, 133/2, 1.5519, 1.3260; 3-ClC<sub>6</sub>H<sub>4</sub>, O, C<sub>9</sub>H<sub>10</sub>Cl<sub>2</sub>O<sub>2</sub>, 68.4, 154-6/2, 1.5532, 1.3210; 2,4-Cl<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, CO, C<sub>9</sub>H<sub>9</sub>Cl<sub>3</sub>O<sub>2</sub>, 65, 184-5/4, 1.5650, 1.4303; 2,4,5-Cl<sub>3</sub>C<sub>6</sub>H<sub>2</sub>, O, C<sub>9</sub>H<sub>8</sub>Cl<sub>4</sub>O<sub>2</sub>, 30, 58-1, --, --; Ph, S (Ib), C<sub>9</sub>H<sub>11</sub>ClOS, 79, 142/2, 1.5860, 1.2427; 4-ClC<sub>6</sub>H<sub>4</sub>, S, C<sub>9</sub>H<sub>10</sub>Cl<sub>2</sub>OS, 50, 156-7/2, 1.6010, 1.3437; 4,5-Cl<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, S, C<sub>9</sub>H<sub>8</sub>Cl<sub>3</sub>OS, 77, 185-7/2, 1.6100, 1.4571. To a mixture of 22.1 grams of Ia and 10.12 grams of Et<sub>3</sub>N, 12.32 grams of o-anisidine are added at 80° for 30 minutes. The mixture is mixed for 15 hours at 85-100°, separating 8.8 grams of II (R = 4-ClC<sub>6</sub>H<sub>4</sub>, R' = H, R'' = 2-MeOC<sub>6</sub>H<sub>4</sub>, X = O), C<sub>16</sub>H<sub>18</sub>ClNO<sub>3</sub>, yield 54%, boiling point 133-7/4;  $n_D^{20}$  1.5933,  $d_4^{20}$  1.2455. The II are obtained analogously (R, R', R'', X, the molecular formula, the yield in %, the boiling point in °C/mm or the melting point in °C,  $n_D^{20}$ ,  $d_4^{20}$  are given): 4-ClC<sub>6</sub>H<sub>4</sub>, H, Ph, O, C<sub>15</sub>H<sub>16</sub>ClNO<sub>2</sub>, 2/5

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45, 78-80, --, --; 4-ClC<sub>6</sub>H<sub>4</sub>, H, 3-MeC<sub>6</sub>H<sub>4</sub>, O, C<sub>16</sub>H<sub>18</sub>ClNO<sub>2</sub>, 20, 69-70, --, --;  
 4-ClC<sub>6</sub>H<sub>4</sub>, H, 2,4-Me<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, O, C<sub>17</sub>H<sub>20</sub>ClNO<sub>2</sub>, 33, 86-7, --, --; 4-ClC<sub>6</sub>H<sub>4</sub>, Me, Ph,  
 O, C<sub>16</sub>H<sub>18</sub>ClNO<sub>2</sub>, 33, 203-5/10, 1.5925, 1.2183; 4-ClC<sub>6</sub>H<sub>4</sub>, Et, Ph, O, C<sub>17</sub>H<sub>20</sub>ClNO<sub>2</sub>,  
 25, 203-5/5, 1.5872, 1.2414; 4-ClC<sub>6</sub>H<sub>4</sub>, H, n-C<sub>8</sub>H<sub>17</sub>, O, C<sub>17</sub>H<sub>28</sub>ClNO<sub>2</sub>, 13, 174-5,  
 --, --; Ph, H, n-C<sub>8</sub>H<sub>17</sub>, S, C<sub>17</sub>H<sub>29</sub>NOS, 20, 66-7, --, --; Ph, Et, Et, S, C<sub>13</sub>H<sub>21</sub>NOS,  
 60, 147-8/2, 1.5480, 1.0722; Ph, H, 2-MeC<sub>6</sub>H<sub>4</sub>, S, C<sub>16</sub>H<sub>19</sub>NOS, 30, 214-6/2, 1.6180,  
 1.1486; h, H, 3-MeC<sub>6</sub>H<sub>4</sub>, S, C<sub>16</sub>H<sub>19</sub>NOS, 30, 46-8, --, --; Ph, H, Ph, S, C<sub>15</sub>H<sub>17</sub>NOS,  
 42.4, 56-8, --, --; Ph, H, 2,3-Me<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, S, C<sub>17</sub>H<sub>21</sub>NOS, 42, 46-7, --, --; Ph, H,  
 2-MeOC<sub>6</sub>H<sub>4</sub>, S, C<sub>16</sub>H<sub>19</sub>NO<sub>2</sub>S, 35, 233-5/5, 1.6150, 1.1852; Ph, H, 4-ClC<sub>6</sub>H<sub>4</sub>, S, C<sub>15</sub>  
 H<sub>16</sub>ClNOS, 34, 64-5, --, --; Ph, Me, Ph, S, C<sub>16</sub>H<sub>19</sub>NOS, 41, 200-2/2, 1.6210,  
 1.1444; Ph, Et, Ph, S, C<sub>17</sub>H<sub>21</sub>NOS, 30, 213-15/4, 1.6090, 1.1789; Ph, n-C<sub>8</sub>H<sub>17</sub>, Ph,  
 S, C<sub>23</sub>H<sub>33</sub>NOS, 25, 238-40/3, 1.5670, 1.0522. The III is obtained by heating a  
 mixture of I and the corresponding carboxylic acid in an organic solvent in the  
 presence of H<sub>2</sub>SO<sub>4</sub> with continuous redistillation of the water in the form of  
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the azeotrope (R, R'', X, the molecular formula, the yield in %, the melting point in °C or the boiling point in °C/mm,  $n_D^{20}$ ,  $d_4^{20}$  are given): 2-ClC<sub>6</sub>H<sub>4</sub>, CCl<sub>3</sub>, O, C<sub>11</sub>H<sub>9</sub>Cl<sub>5</sub>O<sub>3</sub>, 42, 184-5/3, 1.5401, 1.4731; 4-ClC<sub>6</sub>H<sub>4</sub>, CH<sub>2</sub>Cl, O, C<sub>11</sub>H<sub>11</sub>Cl<sub>3</sub>O<sub>3</sub>, 58, 180-1/3, 1.5385, 1.3823; 4-ClC<sub>6</sub>H<sub>4</sub>, Et, O, C<sub>12</sub>H<sub>14</sub>Cl<sub>2</sub>O<sub>3</sub>, 51, 160-1/5, 1.5194, 1.2471; 4-ClC<sub>6</sub>H<sub>4</sub>, Pr, O, C<sub>13</sub>H<sub>16</sub>Cl<sub>2</sub>O<sub>3</sub>, 50, 170-2/5, 1.5180, 1.2230; 2,4-Cl<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, CH<sub>2</sub>Cl, O, C<sub>11</sub>H<sub>10</sub>Cl<sub>4</sub>O<sub>3</sub>, 51, 183-5/4, 1.5493, 1.4556; 2,4-Cl<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, CCl<sub>3</sub>, O, C<sub>11</sub>H<sub>8</sub>Cl<sub>6</sub>O<sub>3</sub>, 50, 190-3/3, 1.5510, 2.5178; 2,4-Cl<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, Et, O, C<sub>12</sub>H<sub>13</sub>Cl<sub>3</sub>O<sub>3</sub>, 46, 178-80/2, 1.5380, 1.3465; 2,4-Cl<sub>2</sub>C<sub>6</sub>H<sub>3</sub>, Pr, O, C<sub>13</sub>H<sub>15</sub>Cl<sub>3</sub>O<sub>3</sub>, 40, 188-90/2, 1.5253, 1.3103; Ph, Me, S (IIIa), C<sub>11</sub>H<sub>13</sub>Cl<sub>10</sub>S, 57, 166-9/3, 1.5520, 1.2203; Ph, Et, S, C<sub>12</sub>H<sub>15</sub>-Cl<sub>10</sub>S, 50, 163-5/3, 1.5402, 1.1751; Ph, Pr, S, C<sub>13</sub>H<sub>17</sub>Cl<sub>10</sub>S, 42, 183-5/8, 1.5335, 1.1546; Ph, CH<sub>2</sub>Cl, S, C<sub>11</sub>H<sub>12</sub>Cl<sub>2</sub>O<sub>2</sub>S, 40, 178-80/2, 1.5740, 1.2900; Ph, CCl<sub>3</sub>, S, C<sub>11</sub>H<sub>10</sub>Cl<sub>4</sub>O<sub>2</sub>S, 40, 215-20/34, 1.5650, 1.2528. Ten grams of SO<sub>2</sub>Cl<sub>2</sub> are added to 14 grams of IIIa in 30 ml of dry CCl<sub>4</sub> in one hour at 20-25°, the mixture is held for 6 hours at 20°, separating 6.5 grams of III(R = 4-ClC<sub>6</sub>H<sub>4</sub>, R'' = Me, X = S).

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$C_{11}H_{12}Cl_2O_2S$ , yield 41%, boiling point,  $138-40^\circ/2$ ,  $n_D^{20}$  1.5785,  $d_4^{20}$  1.2812.

Fifteen grams of  $POCl_3$  are added to 20.22 grams of Ib; the mass is mixed for 5 hours at  $60^\circ$ , separating 19 grams of VI ( $R = Ph$ ,  $X = S$ ),  $C_9H_{10}Cl_2S$ , yield 86.4%,

boiling point  $122-4^\circ/2$ ,  $n_D^{20}$  1.5830,  $d_4^{20}$  1.2591. Thirteen grams of  $SOCl_2$  are dropped into a mixture of 22 grams of II and 13 grams of  $C_5H_5N$  at  $-20-0^\circ$ ; the mass is held for 6 hours at  $100^\circ$ , 300 ml of dilute HCl is added, it is extracted with ether, the ether layer is washed with water and a sulfur solution, it is dried, yielding 19 grams of IV ( $R = 4-ClC_6H_4$ ,  $X = O$ ),  $C_9H_9Cl_3O$ , yield 79.80,

boiling point  $133.5-4^\circ/1$ ,  $n_D^{20}$  1.5527,  $d_4^{20}$  1.3455. The IV is obtained analogously ( $X = O$ ) ( $R$ , the molecular formula, the yield in %, the boiling point in  $^\circ C/mm$ ,  $n_D^{20}$ ,  $d_4^{20}$  are given): Ph,  $C_9H_{10}Cl_2O$ , 82.2,  $106/1$ , 1.5417, 1.2429; 2,4-

$Cl_2C_6H_3$ ,  $C_9H_8Cl_4O$ , 65,  $145-7/1$ , 1.5629, 1.4317; 2,4,5- $Cl_3C_6H_2$ ,  $C_9H_7Cl_5O$ , 50,

$158-61/1$ , 1.5775, 1.5250. Thirty-six milliliters of 30%  $H_2O_2$  are added to a mixture of 18 grams of Ib and 43 ml of ice AcOH; the mixture is heated for 5 hours at  $50-75^\circ$ , isolating 20 grams of 1-phenylsulphonyl-3-chloropropanol, yield 95%, melting point  $69^\circ$  (petroleum ether). The I-IV have herbicidal and fungicidal activity.

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USSR

UDC 620.186.2:669.14.018.44

MASLENKOV, S. B., VERZINA, V. K., GEVELING, N. N., and BUROVA, N. N., Central Scientific Research Institute of Ferrous Metallurgy

"Segregation Microheterogeneity in 4Kh12N8G8MFB (E1481) Heat-Resistant, Electroslag-Remelted Steel"

Moscow, Metallovedeniye, No 9, Sep 72, pp 70-72

Abstract: A comparative analysis was made of intracrystalline segregation in ingots of a 13-8-8 austenitic steel (E1481) produced by open-arc melting followed by electro-slag remelting. The composition of the remelted steel was (in %): 0.39 C, 0.41 Si, 13.4 Cr, 8.2 Mn, 8.0Ni, 1.4 V, 1.3 Mo, and 0.45 Nb. The degree of dendritic heterogeneity was evaluated by the coefficient of segregation  $K_s$ , which is the ratio of maximum concentration of an element to the minimum concentration of the element in a dendritic cell. The steel was made at the Elektrostal' Plant in a 20-ton electrical furnace. The resulting electroslag remelted ingot weighed 3200 kg. It was found that E1481 steel, alloyed with strong carbide-forming elements and carbon, experiences inter-axial segregation of the basic components. The segregation heterogeneity is determined by the nature of the macrostructure, and the maximum heterogeneity was the same for both the open-arc and electroslag melted steel. 1 figure, 1 table, 5 bibliographic references.

1/1

USSR

UDC 620.17:669.14.018.44

MASLENKOV, S. B., ~~BUROVA N. N.~~ and ZEMSKAYA, T. V., Central Scientific  
Research Institute of Ferrous Metallurgy imeni I. P. Bardin (TsNIChERMET)  
"Anisotropy of the Mechanical Properties of Nickel-Base High-Temperature  
Alloys"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 1, 1972,  
pp 70-71

Abstract: This study concerns the effect of temperature on the anisotropy of the mechanical properties of high-temperature alloys (with various degrees of alloying) including KhN70MVTYuB (EI598), EI826, EI929, EP109 as well as on various smelting methods such as open induction vacuum-arc and double vacuum-arc remelting. Two factors are shown to affect the anisotropy of the mechanical properties: the chemical inhomogeneity and its related differences in the degree of strengthening of certain areas along and between the axes; nonuniform distribution of insoluble inclusions -- the liquation products. The most resistant in the nickel-base alloys are tungsten liquation inclusions causing nonuniform decay in the fibrous

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USSR

MASLENKOV, S. B., et al, Metallovedeniye i termicheskaya obrabotka metallov, No 1, 1972, pp 70-71

structure following hot remelting of castings. At room temperature the anisotropy of the mechanical properties is related basically to the non-uniform distribution of the strengthening phase. At solubility temperatures the anisotropy in plasticity is determined primarily by the amount and distribution of nonmetallic inclusions. To reduce the anisotropy of the mechanical properties of the nickel-base alloys, it would be necessary to refine them with respect to nonmetallic inclusions by double vacuum remelting. (2 illustrations, 1 table, 2 bibliographic references).

2/2

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BUROVA, N. N.

JPRS 55985  
4 May 1972

UDC 620.17:669.14.018.44

ANISOTROPY OF THE MECHANICAL PROPERTIES OF HEAT-RESISTANT  
ALLOYS ON A NICKEL BASE

[Article by S.B. Zhuravkov, N.N. Burova, I.V. Kerskaya, Central  
Scientific Research Institute of Ferrous Metallurgy, Moscow,  
Metallovedeniye i Termicheskaya Obrabotka Metallov, Russian,  
No 1, 1972, pp 76-77]

A sharply expressed dendritic heterogeneity is developed during crystallization in heat-resistant alloys on a nickel base [1]. In the refining process the elements of the dendritic structure and the nonmetallic inclusions are drawn in the direction of the deformation, forming a filamentary structure that is characterized by a chemical and structural heterogeneity. The difference in the chemical composition of the segments corresponding to the axes and interaxes and the different degree of strengthening during dispersal, hardening in conjunction with the line arrangement of the insoluble inclusions concentrated in the interaxes produce an anisotropy in the mechanical properties of the deformed metal.

In determining the means for decreasing the anisotropy in the properties it follows to differentiate the influence on the deformation capacity of the metal of the periodic chemical microheterogeneity and of the heterogeneous distribution of the insoluble inclusions. The first type of heterogeneity can be explained by the different degree of alloying of the axial and interaxial volumes as well as by their structural state. The heat resistance of such a heterogeneity is relatively low and may be lowered by high-temperature heating and mechanical refining of the alloy. Decreasing the second type of heterogeneity requires using optimal soaking procedures which will ensure the required degree of refining.

Depending on the composition of the alloy and the test temperature the relative influence of the structural and chemical

-1-

[X - USSR - 1]

USSR

UDC 669.24.017

MASLENKOV, S. B., BUROVA, N. N., and ZEMSKAYA, T. V.

"Intracrystalline Liquefaction in Ingots of Heat-Resistant Nickel-Base Alloys Produced by Vacuum Arc Remelting"

Spetsial'nyye Stali i Splavy [Special Steels and Alloys--Collection of Works], No 77, Metallurgiya Press, 1970, pp 49-55

Translation: The method of local X-ray spectral analysis is used to study the liquefaction microirregularity in ingots of heat-resistant alloys types EP109, EI929, EI826, and EI598, produced by vacuum arc remelting. The direction of liquefaction and intensity of segregation of the basic components of the alloys are determined. Niobium and titanium, the elements having a high degree of chemical affinity to nickel, are most strongly liquated. The alloying elements can be placed in the following series in order of increasing tendency to liquefaction in nickel-based alloys: aluminum, cobalt, chromium, tungsten, molybdenum, titanium, niobium.

The intensity of segregation of alloying elements increases in the direction toward the axis of the ingot, sharply increasing upon transition from the zone of columnar crystallization to the equilibrium crystallization zone. 2 tables.

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Nickel

USSR

UDC 669.245

BUROVA, N. N., and MASLENKOV, S. B., Moscow

"Intracrystalline Liquefaction in Nickel Alloys, Alloyed With Niobium"

Moscow, Izvestiya Akademii Nauk SSSR, Metally, No 1, Jan 71, pp 91-93

Abstract: This work determines the quantitative characteristics of intracrystalline liquation in binary (Ni-Nd), ternary (Ni-Cr-Nd), and complex-alloy compounds based on type KhN77TYu nickel, in which a portion of the titanium is replaced with niobium, and type KhNS0MBVYu -- an alloy with a high content of niobium, which is hardened during aging by separation of the  $Ni_3Nb$  phase. In alloys based on nickel, the niobium is found to have a sharply expressed tendency to liquation. The heterogeneity of the distribution of niobium is reinforced in the presence of chromium. An increase in the content of niobium in nickel-chromium alloys causes a change in the direction of liquation of the chromium. The elements included in the composition of the heat-

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USSR

BUROVA, N. N., and MASLENKOV, S. B., Izvestiya Akademii Nauk  
SSSR, Metally, No 1, Jan 71, pp 91-93

resistant alloys studied can be placed in the following order of  
increasing tendency toward liquation: aluminum, chromium, iron,  
molybdenum, tungsten, titanium, niobium.

2/2

1/2 008 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--INDIVIDUAL HYDROCARBON COMPOSITION OF GASOLINE FROM KHODZHIBAD  
PETROLEUM -U-

AUTHOR-(03)-KHODZHAYEV, G.KH., RIZAYEVA, M.K., BUROVA, YE.G.

COUNTRY OF INFO--USSR

SOURCE--UZB. KHIM. ZH. 1970, 14(2), 53-5

DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, PROPULSION AND FUELS

TOPIC TAGS--CHEMICAL COMPOSITION, GASOLINE, CRUDE OIL, GEOGRAPHIC  
LOCATION, PETROLEUM DEPOSIT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3001/2221

STEP NO--UR/0291/70/014/002/0053/0055

CIRC ACCESSION NO--AP012/583

UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0127583

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE GASOLINES, D PRIME20  
0.7384, CONTAINED INDIVIDUAL HYDROCARBONS AS FOLLOWS: 7 AROMATICS (5.18  
WT. PERCENT), 43 PARAFFINS (50.96PERCENT), 14 CYCLOPENTANES  
(6.72PERCENT), AND 16 CYCLOHEXANES (19.39PERCENT).

UNCLASSIFIED

Information Theory

USSR

UDC: 682.327.02

BUROVIKOV, I. I., MOLOGIN, A. I.

"A Direct-Access Memory"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 6, 1970, pp 37-38, patent No 262181, filed 16 Dec 68

Abstract: This Author's Certificate introduces a direct-access memory which contains a stack of accumulative matrices, a monitoring unit and a control unit. Connected to the matrix stack are the address and number channels of the memory. As a distinguishing feature of the patent, provision is made for detection and correction of malfunctions. The monitoring unit contains a checking register, a cadence pulse generator, a memory cell address counter, a malfunction coordinate selector, a unit which shapes a malfunction coordinate selector interrogation signal, a gating signal shaper, and a reset signal blocking unit. Connected to the input of the malfunction coordinate selector are the outputs of the unit which shapes the selector interrogation signal and the outputs of the number register for the memory number channel and the checking register. The corresponding inputs of the checking register are connected to the outputs of channels which are coupled to the readout amplifiers of the memory number channel and to the gating signal channel. The inputs of the reset signal blocking unit are connected to the output of the control unit and to the output of the malfunction coordinate selector. The output of the cadence pulse generator is connected to the gate

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USSR

BUROVIKOV, I. I., MOLOGIN, A. I., Otkrytiya, Izobreneniya, Promyshlennyye  
Obraztsy, Tovarnyye Znaki, No 6, 1970, pp 37-38, patent No 262181, filed 16 Dec 68

input, and the output of the gate is connected to the input of the address counter,  
and through a collector circuit to the input of the control unit, while the address  
counter output is connected to the input of the address register in the memory  
number channel.

2/2

1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--EXISTENCE OF A PLACENTAL BARRIER FOR CESIUM-137 -U-  
AUTHOR--(04)--BAKLANOVA, S.M., BUROVINA, I.V., LEONTYEV, V.G., SKULSKIY,  
I.A.  
COUNTRY OF INFO--USSR  
SOURCE--RADIOBIOLOGIYA 1970, 10(1), 141-4  
DATE PUBLISHED--70  
SUBJECT AREAS--NUCLEAR SCIENCE AND TECHNOLOGY, BIOLOGICAL AND MEDICAL  
SCIENCES  
TOPIC TAGS--CESIUM ISOTOPE, HEART MUSCLE, WHITE RAT, GUINEA PIG, PLACENTAL  
TRANSPORT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3001/1836 STEP NO--UR/0205/70/010/001/0141/0144  
CIRC ACCESSION NO--AP0127246  
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0127246

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TISSUES OF THE GASTROCNEMIUM MUSCLE AND HEART OF NEWBORN, 8 AND 21 DAY OLD, AND ADULT WHITE RATS, AND SKELETAL MUSCLE TISSUES OF NEWBORN, AND ADULT GUINEA PIGS, WERE STUDIED.

DIFFERENCES IN THE CONTENT OF THE ALKALI ELEMENTS IN THE TISSUES DEPENDED ON THE DEGREE OF FUNCTIONAL MATURITY OF THE TISSUES AND WAS NA LARGER THAN K LARGER THAN RB LARGER THAN CS. THE ION SELECTIVE PROPERTIES OF THE TISSUES, ESP. DURING ONTOGENESIS DETD. THE PRIME137 CS DISTRIBUTION BETWEEN THE MOTHER AND OFFSPRING. FACILITY: INST. EVOL. FIZIOL. BIOKHM. IM. SECHENOVA, LENINGRAD, USSR.

UNCLASSIFIED



1/2 030 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--CHANGES IN THE DISTRIBUTION OF ALKALINE ELEMENTS IN ORGANS AND  
TISSUES IN ONTOGENETIC DEVELOPMENT OF GUINEA PIG AND ALBINO RAT -U-  
AUTHOR-(04)-SKULSKIY, I.A., BAKLANOVA, S.M., BUROVINA, I.V., LEONTYEV,  
V.G.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL EVOLYUTSIONNOY BIOKHIMII I FIZIOLOGII, 1970. VOL 6. NR 1,  
PP 3-11  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--ALKALI METAL, SODIUM, POTASSIUM, LIVER, HEART MUSCLE,  
RUBIDIUM, LIPID, GUINEA PIG, RAT, BRAIN, CESIUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3005/0385 STEP NO--UR/0385/70/006/001/0003/0011  
CIRC ACCESSION NO--AP0132614  
UNCLASSIFIED

2/2

030

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0132614

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE GENERAL PATTERN OF THE DISTRIBUTION OF ALKALINE ELEMENTS IN ORGANS AND TISSUES WHICH IS REVEALED IN COMPARATIVE STUDIES ON VERTEBRATES, IS ALSO FOUND AT EARLY POSTNATAL STAGES OF MAMMALS. THESE FEATURES INCLUDE RELATIVELY CONSTANT VALUES OF NA-K RATIO IN THE LIVER AND CARDIAC MUSCLE, ELEVATED SELECTIVITY OF HEPATIC CELLS TO RUBIDIUM IONS, POSITIVE CORRELATION BETWEEN THE CONTENT OF LIPIDS AND SODIUM IN TISSUES. FORMERLY OBSERVED DIFFERENCES IN THE DISTRIBUTION OF ALKALINE ELEMENTS IN TISSUES OF ANIMALS FROM DIFFERENT CLASSES OF VERTEBRATES ARE FOUND SIMILARLY DURING ONTOGENETIC DEVELOPMENT OF GUINEA PIG AND RAT. DURING THE DEVELOPMENT OF FUNCTIONAL ACTIVITY OF MUSCLE TISSUE THE RATIO NA-K DECREASES. DIFFERENCES BETWEEN THE BRAIN AND OTHER TISSUES WITH RESPECT TO THEIR RUBIDIUM AND ESPECIALLY CAESIUM CONTENTS INCREASE. THIS PROCESS IS PRESUMABLY DUE TO THE INCREASE IN THE GLIAL MOLITY OF THE BRAIN WHICH IS RICH IN SODIUM AND LOW IN RUBIDIUM AND CAESIUM. FACILITY: INSTITUTE OF EVOLUTIONARY PHYSIOLOGY AND BIOCHEMISTRY, USSR ACADEMY OF SCIENCES, LENINGRAD.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--MACROKINETICS OF THE FLUIDIZED BED LEACHING OF ZINC CINDERS -U-  
AUTHOR--(02)--BUROVOY, I.A., DRACHEVA, T.V. *B*  
COUNTRY OF INFO--USSR  
SOURCE--TSVET. METAL. 1970, 43(1), 26-30  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--MATERIALS  
  
TOPIC TAGS--FLUIDIZED BED, EXTRACTIVE METALLURGY, ZINC COMPOUND, REACTION  
KINETICS, MATHEMATIC MODEL, THERMODYNAMIC ANALYSIS  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1986/0757 STEP NO--UR/0136/70/043/001/0026/0030  
CIRC ACCESSION NO--AP0102722  
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0102722

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXPTL. RESULTS ARE PRESENTED ON THE TITLE SUBJECT, AND A MODEL IS PROPOSED FOR THEIR MATH. TREATMENT. THE EXPTS. WERE PERFORMED UNDER SO CALLED GRADIENTLESS ISOTHERMAL CONDITIONS, UNDER WHICH THE DROP IN THE CONCNS. OF THE LIQ. REAGENT AT THE ENTRANCE AND AT THE EXIT TEND TOWARD ZERO, WHICH SIGNIFICANTLY FACILITATES THE SUBSEQUENT TREATMENT OF THE EXPTL. DATA. THE MATH. MODELING METHOD FOR THE TREATMENT OF THE EXPTL. DATA WAS NECESSARY BECAUSE DURING THE EXPT. ONE CANNOT BRING ABOUT CONDITIONS UNDER WHICH ONLY ONE OF THE GIVEN PARAMETERS WOULD VARY AND WHERE THE OTHERS WOULD REMAIN CONST. THE MACROKINETIC CONSTS. WERE DETD. BY VARYING THE COEFFS. OF THE MATH. MODEL WITH A GIVEN STRUCTURE UNDER THE CONDITION OF THE MIN. OF THE MEAN SQUARE ERROR. MOST OF THE EXPTS. WERE PERFORMED AT THE RATE OF 59 CM-MIN. AT C PRIMEO H SUB2 SO SUB4 EQUALS 100 G-L., THE DAMPING COEFF. OF THE LEACHING RATE BY REACTION PRODUCTS IS 1-10, 1-20 THAT FOR LEACHING FROM BRIQUETTES.

UNCLASSIFIED

USSR

UDC 621.375.127.3(088.8)

BELOV, V. M., KLITORIN, I. F., PODZIN, A. YE. BUROVSEV, V. A.


"Two-Stage Emitter Repeater"

USSR Author's Certificate No 301816, filed 20 Oct 1969, published 8 Jun 1971  
(from RZh-Radiotekhnika, No 1, 1972, Abstract No 1D245P)

Translation: A two-stage emitter repeater made of transistors of different types of conductivity with a current-stabilizing transistor in the emitter circuit of the transistor of each cascade is proposed. The proposed repeater is distinguished by the fact that in order to decrease the input capacitance and increase the input impedance the collector of the transistor of the first cascade is connected to the collector of the current-stabilizing transistor of the second cascade connected through the parallel-connected resistor and capacitor (or stabilatron) to the emitter of the transistor of the second cascade.

1/1

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1/2 062 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--CERAMIC REINFORCED WITH METAL FIBRES, REVIEW -U-  
AUTHOR--(02)-KOPYEV, I.M., BUSALOV, YU.YE.   
COUNTRY OF INFO--USSR  
SOURCE--FIZIKA I KHIM. OBRABOT. MAT., JAN.-FEB. 1970, (1), 57-69.  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--MATERIALS  
  
TOPIC TAGS--METAL FIBER, FIBER METALLURGY, COMPOSITE MATERIAL, ALUMINUM  
OXIDE, SILICON, MOLYBDENUM, NICKEL, CERAMIC PRODUCT, THERMAL SHOCK,  
IMPACT STRENGTH, BIBLIOGRAPHY, MECHANICAL STRENGTH, REINFORCED MATERIAL  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3001/0065 STEP NO--UR/0472/70/000/001/0057/0069  
CIRC ACCESSION NO--AP0125900  
UNCLASSIFIED

2/2 062

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125900

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRESENT STATE OF KNOWLEDGE REGARDING THE CREATION OF COMPOSITE MATERIALS WITH A CERAMIC BASE AND A NETWORK OF REINFORCING METAL FIBRES IS REVIEWED. THE MOST SUITABLE FORM OF THE REINFORCING METALLIC COMPONENT IS THAT OF CONTINUOUS FIBRES OR STRIP. THE MAX. VOLUME PROPORTION OF THE FIBRES PROVIDING INCREASED MECHANICAL STRENGTH IS SIMILAR TO 35PERCENT. REINFORCING THE BASE IN THIS MANNER GREATLY INCREASES THE MECHANICAL STRENGTH, PARTICULARLY THE IMPACT STRENGTH AND RESISTANCE TO THERMAL SHOCK. METALS PARTICULARLY SUITABLE FOR REINFORCING SUCH CERAMIC MATERIALS AS AL SUB2 O SUB3, SIC, AND SIO SUB2 ARE MO AND NI.

UNCLASSIFIED

1/3 011 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--PERRHENATES OF ANTIPYRINE AND ITS DERIVATIVES. GRAVIMETRIC AND  
TITRIMETRIC DETERMINATION OF RHENIUM BY MEANS OF  
AUTHOR--(05)-AKIMOV, V.K., BUSEV, A.I., ZAYTSEV, B.YE., YEMELYANOVA, I.A.,  
GELFER, S.M.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 518-25  
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, EARTH SCIENCES AND OCEANOGRAPHY  
TOPIC TAGS--RHENIUM, MINERAL, METAL CHEMICAL ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3005/0161

STEP NO--UR/0075/70/025/003/0518/0525

CIRC ACCESSION NO--AT0132442

UNCLASSIFIED



2/3 011

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132442

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PERRHENATES OF ANTIPYRINE (I), DIANTIPYRYLMETHANE (II), DIANTIPYRYLMETHYLMETHANE (III), DIANTIPYRYLPROPYLMETHANE (IV), AND DIANTIPYRYLPHENYLMETHANE (V) WERE OBTAINED BY ADDN. OF 2PERCENT 1:1 PYRYLMETHANES, ACOH TO AN ACID (0.1-0.5N H SUB2 SO SUB4) SOLN. OF KREO SUB4. ALL THE PERRHENATES ARE DIFFICULTLY SOL. IN H SUB2 O WITH THE EXCEPTION OF THAT WITH I. THEIR COMPN. AND STRUCTURE WERE STUDIED. THE PERRHENATE OF I IS A WHITE POWDER SOL. IN H SUB2 O AND IN MOST OF THE ORG. SOLVENTS AND DECOMPS. ON MELTING. THE PERRHENATE OF II DISSOLVES IN MINERAL ACIDS AND ORG. SOLVENTS, DECOMPS. ON MELTING AT 190DEGREES; THE PERRHENATE OF III BEHAVES ANALOGOUSLY TO THAT OF II, M. 116DEGREES; THE PERRHENATE OF IV MELTS AT 198DEGREES AND THAT OF V AT 202DEGREES. PERRHENATES BEHAVE IN NONAQ. MEDIA AS MONOBASIC ACIDS AND CAN BE TITRATED BY ALKALIS. THE TITRN. CURVE HAS 1 JUMP, REPRESENTING THE NEUTRALIZATION OF THE CATION. THE PERRHENATE OF I IS THE MOST ACID, THOSE OF IV AND V THE WEAKEST ACIDS. THE SOLY. OF THE PERRHENATES DECREASES IN THE ORDER I GREATER THAN II GREATER THAN III GREATER THAN IV GREATER THAN V. THE BEST PRECIPITANT HOWEVER IS IV. THE SOLY. OF THE PERRHENATE OF IV INCREASES SOMEWHAT AFTER INCREASING THE ACIDITY OF SOLNS. A GRAVIMETRIC AND A TITRIMETRIC METHOD WAS DEVELOPED FOR RE DETN. BY USING IV AS PRECIPITANT. ALKALI AND ALK. EARTH METALS, ZN(II), AL(III), CD(II), FE(II), CU(II), CL PRIME NEGATIVE AND SO SUB4 PRIME NEGATIVE NEGATIVE DO NOT INTERFERE; MO(VI), W(VI), NO SUB3 PRIME NEGATIVE DO.

UNCLASSIFIED

3/3 011

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AT0132442

ABSTRACT/EXTRACT--THE GRAVIMETRIC METHOD PERMITS THE DETN. OF 15-60 MG RE  
AS (C SUB26 H SUB30 N SUB4 O SUB2 .H)RED SUB4 WITH A MAX. ERROR OF  
0.52PERCENT RELATIVE. IN THE TITRN. METHOD, THE PPT. OF THE PERRHENATE  
OF IV FROM THE GRAVIMETRIC METHOD IS DISSOLVED IN 50-60 ML ME SUB2 CO  
AND TITRATED POTENTIOMETRICALLY WITH 0.1N NAOH OR ET SUB4 NOH IN A 3:1 C  
SUB6 H SUB6 DOUBLE BOND MEDH MIXT. BY USING A GLASS AND A CALOMEL  
ELECTRODE. THE METHOD ALLOWS THE DETN. OF 24-25 MG RE WITH A PLUS OR  
MINUS 3.1PERCENT ERROR. FACILITY: SCI.-RES. INST. ORG.  
INTERMED. DYES, MOSCOW, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--EFFECT OF ULTRAVIOLET IRRADIATION ON THE LUMINESCENT PROPERTIES OF  
ALCOHOLIC SOLUTIONS OF THALLIUM AND LEAD SALTS -U-  
AUTHOR-(02)-BELYI, M.U., BURSEVICH, V.V. **B**

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(3), 667-9

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--THALLIUM CHLORIDE, LEAD CHLORIDE, LITHIUM CHLORIDE, ALCOHOL,  
LUMINESCENCE, ABSORPTION SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1996/18C7

STEP NO--UR/0048/70/034/003/0667/0669

CIRC ACCESSION NO--AP0118773

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0118773

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CHANGE OF THE SOLVENT FROM WATER, TO ETCH AND MEDH UETS. A BATHOCHROMIC SHIFT IN THE UV ABSORPTION AND LIMINESCENT SPECTRA OF (1) PBCL SUB2 PLUS L1CL AND (2) TLCL PLUS L1CL SOLNS. A CONSIDERABLE DIFFERENCE IN QUANTUM YIELD WAS ALSO OBSD., BUT THE FORM OF THE CURVES IS MAINTAINED. THE INTENSITY OF LUMINESCENCE, AS WELL AS THE VALUE OF THE ABSORPTIVITY IS DEPENDENT ON THE TIME OF UV IRRADN.: THE INTENSITY AT THE BEGINNING INCREASES WITH THE TIME OF IRRADN. AND LATER DECREASES. WITH A SUFFICIENTLY LONG TIME (3-4 HR), THE LUMINESCENCE BAND DISAPPEARS. AWAY FROM UV FOR 8-10 HR, ABSORPTION AND LUMINESCENCE SPECTRA OF THE IRRADIATED SOLNS. ARE COMPLETELY RESTORED. FROM THE BEGINNING TO SIMILAR TO 60 MIN THE INTENSITY OF ABSORPTION IS PRACTICALLY UNCHANGED, WHILE THE INTENSITY OF LUMINESCENCE INCREASES AND REACHES A MAX. THEREAFTER BOTH DECREASE STEADILY. A TENTATIVE EXPLANATION IS GIVEN, BASED ON REVERSIBLE CHANGE IN THE SOLVENT UNDER IRRADN., LEADING TO A CHANGE IN DEGREE OF INTERACTION BETWEEN THE COMPLEX OF THE CATION AND ANION WITH THE SURROUNDING MEDIUM. THE INFLUENCE IS LARGER ON THE EXCITED STATE OF THE COMPLEX, AND EXPLAINS THE INITIAL INCREASE IN QUANTUM YIELD OF LUMINESCENCE AND UNCHANGED ABSORPTION. FURTHER IRRADN. DISTURBS THE CENTERS OF ABSORPTION WHICH IS REFLECTED IN THE LUMINESCENCE OF THE SOLN.: DECREASE OF LUMINESCENCE FOLLOWS DECREASE IN ABSORPTION. THESE PHENOMENA ARE GENERAL CHARACTERISTICS OF SUCH ALC. SOLNS. AND SHOULD BE ACCOUNTED FOR WHEN STUDYING THEIR LUMINESCENCE AND ABSORPTION SPECTRA.

FACILITY: KIEV. GOS. UNIV. IM. SHEVCHENKO, KIEV, USSR.

UNCLASSIFIED

USSR

BURSHTYN, A. I.; OSELEDCHIK, Yu. S.

"Absorption of Radiation Modulated Simultaneously with Respect to Phase and Amplitude"

Leningrad, Optika i Spektroskopiya; October, 1970; pp 772-5

ABSTRACT: The absorption of radiation of a wide spectral composition was studied. The radiation spectrum was broadened by a random modulation of the phase and amplitude. In the region of weak interaction the probability of absorption is found by the usual formula in perturbation theory. In a strong field coincidence with perturbation theory is attained only at the ends of the lines, whereas in the center of the spectrum the probability is proportional to the square root of the power. The calculations were made on the basis of a forced relaxation theory developed by the authors.

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USSR

UDC 615.917

BURSHTEYN, A. I.

"Tobacco as an Additional Source of Organochlorine Pesticides in the Human Organism"

V sb. Gigiyena primeneniya toksikol. pestitsidov i klinika otravl. (Hygiene of the Application and Toxicology of Pesticides and the Clinical Aspects of Poisoning -- collection of works), vyp. 9, Kiev, 1971, pp 114-122 (from RZh-Farmakologiya. Khimioterapevticheskiye sredstva. Toksikologiya, No 2, Feb 72, Abstract No 2.54.777)

Translation: Out of 200 samples taken to test the residual amounts of pesticides among 22 varieties of tobacco products manufactured in the USSR or bought abroad in 1969-1970, in 87% of the samples, the DDT, DDD and DDE content varied from 0.15 to 4.79 mg/kg. Unmetabolized DDT was detected in 75% of the products, DDD in 68% and DDE in 100%. At a temperature of 100° created in a cigarette near the charring zone, DDT and its metabolite can sublime and, on vaporization enter the lungs with the smoke stream. It is considered necessary to determine the maximum permissible residual amounts of pesticides in finished products and in raw tobacco. Published data are presented on the relation of smoking to the incidence of lung cancer.

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USSR

UDC: 632.95

BURSHTEYN, A. L.

"Tobacco as an Additional Source of Entry of Organochlorine Pesticides Into the Human Organism"

V sb. Gigiyena primeneniya, toksikol. pestitsidov i klinika otravl. (Pesticides -- Safety Measures in Using, Toxicology, and the Poison Clinic--collection of works), vyp. 9, Kiev, 1971, pp 114-122 (from RZh-Khimiya, No 7, Apr 72, Abstract No 7N579)

Translation: From an analysis of 200 samples of 22 grades of tobacco products made in the Soviet Union or imported in 1969-70, only four grades did not contain DDT, DDD and DDE. In 87% of the 22 varieties the concentration of these substances ranged from 0.15 to 4.79 mg/kg. Most frequently encountered was DDE in concentrations from 0.15 to 3.3 mg/kg; the maximum concentration of DDD was no greater than 1.1 mg/kg. Temperature measurements during filter cigarette smoking showed that the temperature was no higher than 140°C near the heated region. The DDT, DDE and DDD may volatilize in this region, and then may enter the lungs of the smoker along with the main stream of tobacco smoke.

P. V. Popov.

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USSR

UDC 632.952

VAS'KOVSKAYA, L. F., SAMOSVAT, L. S., ZAKORDONETS, V. A., BURSHTEYN, A. L., All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymer Materials and Plastics

"Determination of Residual Quantities of Keltane in Water, Fruit (Including Citrus) and Vegetables"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 8, No 10 (84), Oct 70, pp 44-46

Abstract: A method is proposed for determining residual quantities of keltane (4,4'-dichlorodiphenyltrichloromethylcarbionol) in water and on plants. The procedure is based on thinlayer chromatography with appropriate selection of the mobile phase of distinguishing keltane from accompanying organochlorine poisons. The method is specific in the presence of DDT, DDE, DDD and hexachlorocyclohexane. The method is capable of a sensitivity of 1-2  $\mu$ g in a sample, which is 0.05-0.1 mg/kg in analysis of fruits and vegetables, and 0.01-0.02 mg/liter in analysis of water.

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USSR

UDC 546.11+621.31

DAVTYAN, O. K., BURSHTEYN, I. I., All-Union Scientific Research and Planning and Design Institute of Complex Electrical Equipment (Yerevan), Odessa State University imeni I. I. Mechnikov

"Chemical Sources of Hydrogen for Electrochemical Generators. II. Benzene-Cyclohexane System as a Hydrogen Accumulator; Hydrogenation of Benzene"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol XXIV, No 12, 1971, pp 1044-1049

Abstract: A study was made of the benzene-cyclohexane system as a hydrogen accumulator with the catalytic process of hydrogenation of benzene and dehydrogenation of cyclohexane in a single device (generator), changing only the process conditions (temperature and pressure). A study was made of the kinetics of hydrogenation under a pressure of 10 atmospheres in the temperature range of 230-250°. The optimal conditions of the processes were determined, and the possibility of realizing the hydrogenation and dehydrogenation processes with sufficient speed with a comparatively small amount of catalyst, minimum volume and weight of the device were determined. Under the given conditions the reaction is first order with respect to benzene and zero order with respect to hydrogen. The activation energy of the process was 11.6 kcal/mole.

Data are tabulated showing the degree of hydrogenation of benzene as a

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USSR

DAVTYAN, O. K., et al., Armanyskiy Khimicheskiy Zhurnal, Vol XXIV, No 12, 1971, pp 1044-1049

function of the raw material feed rate at various temperatures and the rate constants of the benzene hydrogenation reaction for various feed rates of the raw materials and various temperatures. The hydrogenation of benzene is directly proportional to the benzene pressure and does not depend on the hydrogen concentration.

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1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--PARALLEL CONSECUTIVE STAGES OF OXYGEN AND HYDROGEN PEROXIDE  
REACTIONS. I. REDUCTION OF OXYGEN ON A PLATINUM ELECTRODE -U-  
AUTHOR--(J3)-TARASEVICH, M.R., BURSHTEYN, R.KH., RADYUSHKINA, K.A.  
COUNTRY OF INFO--USSR  
SOURCE--ELEKTROKHIMIYA 1970, 6(3), 372-5 B  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--OXYGEN, CHEMICAL REDUCTION, HYDROGEN PEROXIDE, PLATINUM  
ELECTRODE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1998/1130 STEP NO--UR/0364/70/006/003/0372/0375  
CIRC ACCESSION NO--AP0121689  
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121689

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RATE CONSTS. OF THE INDIVIDUAL STEPS IN THE REDN. OF O SUB2 ON PT ELECTRODE IN ALK. SOLN. WERE CALCD. EXPTS. WERE CONDUCTED IN 0.1N KOH WITH A PT DISK-PT-PT RING ELECTRODE. POLARIZATION CURVES FOR THE IONIZATION OF O SUB2 ON PT ELECTRODE IN 0.1N KOH AND THE LIMITING CURRENT OF THE OXIDN. OF H SUB2 O SUB2 ON THE RING AS A FUNCTION OF THE DISK POTENTIAL ARE GIVEN FOR VARIOUS ROTATION RATES. AT 0.6-0.2 V, A LIMITING CURRENT PLATEAU FOR A 4 ELECTRON PROCESS WAS OBSD. AND AT MORE POS. POTENTIALS THE RATE OF THE PROCESS ON THE REDUCED ELECTRODE WAS CORRESPONDINGLY HIGHER. WITH INCREASING TIME OF THE ELECTRODE AT 0.75 V, THE RATE OF THE 4 ELECTRON PROCESS AND THE CONVERSION OF H SUB2 O SUB2 DECREASED, EVIDENTLY BECAUSE OF CHANGES IN THE SURFACE RESULTING FROM OXIDES ACCUMULATING, AND THE SIMULTANEOUS OCCURRENCE OF 2 AND 4 ELECTRON REACTION OF O SUB2 REDN. WAS INDICATED. A COMBINATION CONST. CHARACTERIZING THE OXIDN. PROCESS (K SUB2 PRIME), REDN. (K SUB3), AND CATALYTIC DECOMP. (K SUB4) OF H SUB2 O SUB2 WAS CALCD. AT LOW POS. POTENTIALS, THE RATE OF THE CATALYTIC DECOMP. OF H SUB2 O SUB2 AT PHI EQUALS 0.8-0.7 V WAS INDEPENDENT OF PHI, BUT AT PHI SMALLER THAN 0.65 V, ONLY THE ELECTROCHEM. REDN. OF H SUB2 O SUB2 WAS PRESENT, DUE TO THE DECREASE OF CHEMISORBED O SUB2 ON THE ELECTRODE SURFACE. THE REDN. OF O SUB2 ON PT IN ALK. SOLN. TAKES PLACES BY A 2 AS WELL AS A 4 ELECTRON MECHANISM. THE LATTER MAY BE DUE TO THE DISSOCN. OF CHEMISORBED O SUB2, LEADING TO THE FORMATION OF AT. ADSORBED O. FACILITY: INST. ELEKTROKHM., MOSCOW, USSR.

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0124106

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHEMISORPTION OF H AND O ON THE SURFACE OF PT AU ALLOYS WAS STUDIED AS A FUNCTION OF ALLOY COMPOSITION IN ACID AND ALKALI SOLUTIONS. METHODS EMPLOYED INCLUDED X RAY SPECTRAL ANALYSIS AND THE PLOTTING OF OF POTENTIODYNAMIC CHARGING CURVES. IN THE CASE OF O THE ALLOY COMPONENTS ACTED ADDITIVELY IN BOTH TYPES OF SOLUTION. IN THE CASE OF H THE DEGREE OF ADSORPTION REMAINED INDEPENDENT OF ALLOY COMPOSITION UP TO 50PERCENT AU. FOR HIGHER PROPORTIONS OF AU THE EFFECT OF THE BETA PHASE OF THE ALLOY BECAME APPRECIABLE AND THE AMOUNT OF CHEMISORBED H DIMINISHED.

UNCLASSIFIED

Graphite

USSR

UDC 541.138.3.546

TARASEVICH, M. R., SABIROV, F. Z., and BURSHTYEN, R. Kh.,  
Institute of Electrochemistry, Academy of Sciences USSR, Moscow

"Mechanism of Electrochemical Reduction of Oxygen on Pyro-  
lytic Graphite"

Moscow, Elektrokhimiya, No. 3, Mar 71, pp 404-407

Abstract: The article describes the reduction of oxygen in a broad range of pH (from 0.5 to 14) on pyrolytic graphite electrodes. On the basis of the results obtained in this work and earlier obtained data the mechanism for the electrochemical reduction of oxygen is proposed. The experiments were conducted with quiescent pyrolytic graphite electrodes. The measurements involved the determination of the polarization curves in various solutions of different pH yet constant ionic strength. In alkaline solutions cathodic polarization curves for the reduction of oxygen and oxidation of hydrogen peroxide merge, which indicates low overpotential for these processes close to the equilibrium potential. In 1/2

USSR

TARASEVICH, M. R., et al, Elektrokhimiya, No. 3, Mar 71,  
pp 404-407

acid solution (pH=2.2) oxidation of  $H_2O_2$  proceeds at significantly more positive potentials than the equilibrium potential in  $O_2$  atmosphere. The described phenomena are close to those observed earlier for the reduction of oxygen on mercury and are explained by the slow stage  $O_2 + e \rightarrow O_2^-$ .

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USSR

UDC 541.138.3

SABIROV, F. Z., TARASEVICH, M. R., BURSHTYN, R. Kh., Institute of Electrochemistry, Academy of Sciences, USSR, Moscow

"Mechanism of Reduction of Oxygen on Pyrographite in Acid Solutions"

Moscow, Elektrokhimiya, Vol 6, No 8, Aug 70, pp 1130-1133

Abstract: The ionization of oxygen in acid solutions is studied at various pH. The experimental data produced allowed the reduction of oxygen in the range of pH values from 4 to 1 to be described by the following kinetic equation:

$$i = [O_2] \exp(-qF\phi/RT), \quad (1)$$

where  $q \approx 0.4-0.5$ . This equation corresponds to retarding of the stage of attachment of the first electron to the oxygen molecule:



The mechanism of ionization of oxygen on pyrographite in acid solutions is therefore similar to the mechanism of ionization of oxygen on a mercury electrode, where the process of electroreduction of the oxygen is determined by reaction (2).  
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USSR

UDC 541.132

BURSHTEYN, R. M., DRIBINSKIY, A. V., TARASEVICH, M. R.,  
CHIZMADZHEV, YU. A., CHIRKOV, YU. G., Institute of Electro-  
chemistry, Academy of Sciences USSR, Moscow

"Mechanism of Current Generation in Hydrophobic Gas-diffusion  
Electrodes. I"

Moscow, Elektrokhimiya, Vol 7, No 12, Dec 71, pp 1826-1830

Abstract: In spite of the wide utilization of hydrophobic gas-diffusion electrodes, the mechanism of their action has been poorly studied. This study was aimed at theoretical analysis of the mechanism of current generation in such electrodes and comparison with experimental results. The active layer of a hydrophobic electrode may be approximated by a model consisting of a gas filled cylinder, its walls a mixture of fluoroplast and a catalyst wetted with the electrolyte. With  $\phi' > 0.97$  the entire surface of porous electrode generates current by an intrakinetic regimen. The electrochemical activity of hydrophobic electrodes calculated from derived equation and the one obtained experimentally for the range  $\phi' = 1.07 \rightarrow 0.9v$  were very close. The  
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• USSR

BURSHTEYN, R. KH., et al, Elektrokhimiya, Vol 7, No 12, Dec 71, pp 1826-1830

electrochemical activity of these electrodes is in direct linear relationship to the layer thickness at low polarizations. It has been determined that when  $\bar{\eta} < 1-1.5$ , the current generation is controlled by the kinetic regimen and when  $\bar{\eta} > 8$ --by the intra-diffusional regimen.

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USSR

UDC 541.13

BURSHTYIN, R. KH., PSHENICHNIKOV, A. G., TARASEVICH, M. R., CRIZMADZHEV, YU. A., and CHIRKOV, YU. G., Institute of Electrochemistry Academy of Sciences USSR, Moscow

"Moisture Exchange in Hydrogen-Oxygen Cell with a Capillary Membrane. II. Cells with a High Moisture Capacity"

Moscow, Elektrokimiya, Vol 9, No 1, Jan 73, pp 107-115

Abstract: Analysis of the moisture exchange process in hydrogen-oxygen element with a capillary membrane and with electrodes exhibiting buffering capacity makes it possible to determine certain advantages of the "open" system (moisture exchange occurs on both electrodes) in comparison to the "closed" system (the moisture exchange occurring only at the hydrogen electrode). When the moisture exchange is sufficiently large in open systems (in contrast to the closed systems), the volume of the liquid in the electrode does not depend on the current charge. Therefore in such a case there are no limitations in regard to the current magnitude in the element.

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1/2 023  
UNCLASSIFIED  
TITLE--COMPETITION OF TRIPLET TRIPLET AND TRIPLET SINGLET ENERGY TRANSFER  
IN A POLYMER -U-  
AUTHOR--(04)-ANISIMOV, V.M., BURSHTEYN, K., BOGOYAVLENSKAYA, YE.,  
KARPUKHIN, O.N.  
COUNTRY OF INFO--USSR  
SOURCE--OPT. SPEKTROSK. 1970, 28(4), 814  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--POLYCARBONATE, BROMINATED ORGANIC COMPOUND, ANTHRACENE,  
CHEMICAL DECOMPOSITION, CYCLOHEXANONE, ELECTRON TRIPLET STATE, POLYMER  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3006/0872  
CIRC ACCESSION NO--AP0134601  
STEP NO--UR/0051/70/028/004/0814/0814  
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0134601

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DICYCLOHEXYL PEROXYDICARBONATE  
MOLS., WHICH YIELD ON DECOMP. CYCLOHEXANONE IN THE TRIPLET STATE, WERE  
USED TO EXAMINE THE TRIPLET TRIPLET (T-T) AND TRIPLET SINGLET (T-S)  
ENERGY TRANSFER IN A POLYCARBONATE IN THE PRESENCE OF BENZIL TRIPLET  
ACCEPTOR) AND 9,10 DIBROMOANTHRACENE (SINGLET ACCEPTOR), (A., 1969).  
THE T-T ENERGY TRANSFER RATE EXCEEDED THE T-S RATE, WHICH WAS CONSISTENT  
WITH EARLIER RESULTS (V. L. ERMOLAEV, 1963).

UNCLASSIFIED

BURSHTEYN, I. B.

USSR

UDC: 621.396.6.049.75.002

1 BURSHTEYN, I. B., PAVLUSHIN, Yu. A.

BURSHTEYN

"A System for Automatic Inspection of Printed-Circuit Boards"

V sb. Obmen opytom v radioprom-sti (Experience Pooling in the Radio Industry--collection of works), vyp. 4, Moscow, 1972, pp 34-36 (from RZh-Radiotekhnika, No 8, Aug 72, Abstract No 8V329)

Translation: The paper takes up some particulars in the construction of the relay-commutation part of a system for automatic inspection of printed-circuit boards, and presents some of the basic technical characteristics of such a system. Resumé.

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1/2 C20 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--THE FUTURE OF RESIDENTIAL LIGHTING OF TODAY -U-  
AUTHOR--(C2)-BURSKIY, V.G., IVANOVA, N.S. **B**  
COUNTRY OF INFO--USSR  
SOURCE--SVETOTEKNIKA (USSR), NO. 1, P. 3-7 (JAN. 1970)  
DATE PUBLISHED----JAN70  
SUBJECT AREAS--PHYSICS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--VISIBLE LIGHT, LIGHT REFLECTION, LIGHT REFRACTION,  
CONSTRUCTION ENGINEERING, GENERAL CONSTRUCTION, CONSTRUCTION INDUSTRY,  
CONSUMER GOODS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3C04/C128 STEP NO--UR/0311/70/000/001/0003/0007  
CIRC ACCESSION NO--AP0130890  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--APG130890

ABSTRACT/EXTRACT--(U) CP-0- ABSTRACT. DISCUSSES MODERN REQUIREMENTS OF RESIDENTIAL LIGHTING WITH DUE REGARD TO ITS DECORATIONAL VALUE, BASED ON THE WORK DONE AT CNIICP, ON SETTING UP OF THE ENTRANCE ZONE, BATHROOM ZONE, ETC. RECOMMENDATIONS ARE GIVEN OF THE TECHNICAL CHARACTERISTICS OF THE LIGHTING OF THE ZONES AND ILLUSTRATIONS SHOWING POSSIBLE METHODS OF LIGHTING OF VARIOUS TYPES OF ROOMS. RECOMMENDATIONS ARE ALSO GIVEN DIRECTING THE NECESSARY FUTURE RESEARCH AND DEVELOPMENT WORK TO IMPROVE THE QUALITY OF LIGHTING OF MASS PRODUCED HOUSES.

UNCLASSIFIED



USSR

UDC 615.765

NEGRESKU, V. Ya., and BURSUK, I. F., Chair of Infectious Diseases, Kishinev Medical Institute and Moldavian Scientific Research Institute of Hygiene and Epidemiology

"Some Aspects of the Epidemiology, Symptomatology, and Diagnosis of Ornithosis in Moldavia"

Kishinev, Zdravookhraneniye, No 5, Sep/Oct 71, pp 45-47

Abstract: During 1967-69, ornithosis antibodies were found in rock doves from various parts of Moldavia. The percentage of complement fixation and inhibitory ornithosis antibodies fluctuated within 46.6-61.2 percent in different parts of the republic. Positive results were obtained in complement fixation reactions with ornithosis antigen in 5.19 percent of 2,731 specimens of blood serum from healthy individuals. The high incidence of ornithosis in Moldavia indicates the possibility of undetected cases of this disease in humans. One hundred eight persons hospitalized for influenza, acute respiratory disease, and pneumonia were examined. Ornithosis was found in 8 persons in the 18-30 age bracket, mostly hospitalized for respiratory disease and pneumonia. It was established by x-ray and allergenic serum methods that the victims suffered from pneumonic, influenza-like, or typhus-like ornithosis. In seven  
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USSR

NEGRESKIJ, V. Ya., and BURSUK, I. F., Zdravookhraneniye, No 5, Sep/Oct 71,  
pp 45-47

cases, contact had been made with birds. The findings demonstrates the necessity of testing any case of the typhus or influenza syndrome or atypical pneumonia for ornithosis, using the serological or allergenic methods of diagnosis.

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Immunology

USSR

BURSIK, I. F., Moldavian Scientific Research Institute of Hygiene and Epidemiology

"Content of Complement-Fixing Ornithosis Antibodies in Donor Sera"

Kishinev, Zdravookhraneniye, No 4, 1971, pp 17-18

Abstract: Serological investigation of semiwild and domestic pigeons in various cities and regions of Moldavia (1967 to 1969) revealed the presence of complement-fixing and inhibiting ornithosis antibodies in 46.6 to 61.2% of the animals. An examination of blood from 2,731 donors living in Kishinev and other cities of Moldavia turned up 142 cases (over 5%) of positive complement-fixation reactions to ornithosis antigen. The specific antibody titers ranged from 1:8 to 1:16. Other studies showed that the incidence of ornithosis among human beings was highest in the spring because contact with diseased birds is most frequent at this time.

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USSR

UDC 616.9-022.39

BURSUK, I. F. Moldavian Scientific Research Institute of Hygiene and Epidemiology

"Virological Examination of Pigeons for Ornithosis"

Kishinev, Zdravookhraneniye, No 3, May/Jun 70, pp 8-11

Abstract: Pigeons easily succumb to ornithosis and even after they recover, they carry and spread the virus for long periods. In a serological study performed in 1969 on pigeons living in the Moldavian SSR, it was found that over one-half of the birds examined had antibodies against ornithosis virus. Virological examination of Moldavian pigeons for ornithosis utilized homogenates of livers and spleens. In addition, bioassays were performed on white mice and chick embryos. Three strains of viruses were found, and subsequently identified as ornithosis viruses. Attention should be paid to the fact that this virus is circulating among pigeons in the republic, since these birds can transmit these pathogens to other animals and to human beings.

USSR

UDC 620.197.1

MARGULOVA, T. KH., Doctor of Technical Sciences, BURSUK, L. M., Candidate of Technical Sciences, BOGATYREVA, S. V., Engineer, LIPANINA, A. A., Engineer; Moscow, Power Engineering Institute

"The Corrosion of Structural Materials in Boron-Containing Solutions That are Used for Controlling the Pump Work of Nuclear Reactors"

Moscow, Teploenergetika, No 12, 1970, pp 14-17

Abstract: The corrosion resistance of steel 1Kh18N9T, zirconium alloys with 1 and 2.5% niobium (the materials of fuel-element shells and cassettes), as well as carbon steel 20 and low-alloy vessel steel in boron-containing solutions is investigated. It is shown that the use of boric acid for "soft" control and the emergency stopping of nuclear reactors does not bring about corrosion of the structural materials. Five figures, 3 tables.

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USSR

UDC 542.61:541.49:546.791.6

KONONENKO, L. I., ~~BURTENKO, I. M.~~, and VITKUN, R. A.

"Extraction of Mixed Complex Compounds of the Uranyl Ion with Tenoyltrifluoroacetone and Organic Compounds"

Leningrad, Radiokhimiya, Vol 13, No 4, 1971, pp 556-562

Abstract: Benzene extractions of mixed complex compounds of the uranyl ion with tenoyltrifluoroacetone and 1-phenyl-2,3-dimethylpyrazolone-5 (Antipyrine) or 1,10-phenanthroline, giving products with the formula  $UO_2TTA_2B$  were carried out to check on theoretically derived expressions for the distribution coefficients of the metal. A mechanism for the extraction of this type of compounds has been discussed. Formulas have been derived expressing the distribution coefficient of the uranyl ion E as a function of hydrogen ion and ligand concentrations. The E values were determined experimentally and related to pH of the solution, concentration of the ligand anions, concentration of base in the aqueous phase, as well as of the concentration of electronegative ligand and base in the organic phase. The extraction constants for these complexes were determined: for  $UO_2TTA_2Ant$   $\log K_{ex} = 3.212 \pm 0.092$ , and for  $UO_2TTA_2Phen$   $\log K_{ex} = 2.53 \pm 0.01$ .

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Inorganic Compounds

USSR

UDC 541.49

BURTENKO, I. M., and KONONENKO, L. I., Odessa Laboratories, Institute of General and Inorganic Chemistry, Academy of Sciences Ukr. SSR

"Complexes of the Uranyl Ion with Tenoyltrifluoroacetone and Derivatives of Phenyl-3-methyl-5-pyrazolone"

Kiev, Ukrainskiy Khimicheskii Zhurnal, Vol 36, No 12, Dec 70, pp 1,213-1,217

Abstract: The mixed complexes of  $UO_2$  with tenoyltrifluoroacetone (HTTA) and bases (B) derived from phenyl-3-methyl-5-pyrazolone were investigated. The bases B were 1-phenyl-2,3-dimethyl-5-pyrazolone (antipyrine - Ant), 1-phenyl-2,3-dimethyl-4-dimethylamino-5-pyrazolone (pyramidon), and diantipyryl methane. Spectrophotometric study of the complexes in benzene solutions, obtained by combining an aqueous solution of uranyl nitrate with an EtOH solution of HTTA + B followed by extraction with benzene upon addition of urotropine to establish a pH of 6-7, showed that the complexes had the composition  $UO_2(TTA)_2B$ . The complexes were isolated in a solid state by precipitation with water from EtOH solutions in which  $UO_2(NO_3)_2$ , HTTA, and B were combined in the molar ratio 1:2:2, whereupon urotropine was added.  $UO_2(TTA)_2$ -Ant was also prepared by extracting an aqueous solution of  $UO_2(NO_2)_2$  with a 1/2

USSR

BURTENKO, L. M., and KONONENKO, L. I., Ukrainskiy Khimicheskiy Zhurnal, Vol 36, No 12, Dec 70, pp 1,213-1,217

benzene solution of HTTA and Ant followed by precipitation of the complex with petroleum ether from the benzene solution. The effect of the pH on the extraction with benzene of U in the form of the  $\text{UO}_2(\text{TIA})_2\text{B}$  complexes was studied. At pH 4.5-7, the extraction of  $\text{UO}_2^{++}$  in the form of  $\text{UO}_2(\text{TIA})_2\text{B}$  was 100% vs. 80-90% in the form of  $\text{UO}_2(\text{TIA})_2$ .

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1/2 025 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--IRON PYROPHOSPHATE -U-  
AUTHOR--TRUSHINSKA, V.A., KONSTANTS, Z., BURTNIYEKS, U., VAYVADS, A.  
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SOURCE--LATV. PSR ZINAT. AKAD. VESTIS, KIM. SER. 1970, (1), 112-13  
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SUBJECT AREAS--MATERIALS  
TOPIC TAGS--IR SPECTRUM, X RAY ANALYSIS, SPECTROSCOPIC ANALYSIS,  
PHOSPHATE, IRON COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IRON PYROPHOSPHATE IS PREPD. BY  
AUTO CLAVING AMORPHOUS FE(III) PHOSPHATE, WHICH WAS PREPD. BY THE  
REACTION OF 87PERCENT H SUB3.PO SUB4 WITH POWD. FE CARBONYL, FOR 4 HR AT  
175DEGREES. THIS PRODUCT EXHIBITS ENDOTHERMAL EFFECTS AT 555 AND  
720DEGREES AND AN EXOTHERMAL EFFECT AT 645DEGREES. THE PRODUCT WAS ALSO  
STUDIED BY X RAY AND IR ANAL.

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Publications

USSR

BURTNİYETSE, N., Editor

Fiziologicheskii i Opticheskii Aktivnyye Polimernyye Veshchestva. Trudy Vtorogo Vsesoyuznogo Simpoziuma po Khimii i Fiziko-Khimii Fiziologicheskii i Opticheskii Aktivnykh Polimernykh Veshchestv (Physiologically and Optically Active Polymers. Proceedings of the Second All-Union Symposium on Chemistry and Physical Chemistry of Physiologically and Optically Active Polymers), Riga, "Zinatne," 1971, 215 pp

Translation: Annotation: Research developments in stereospecific polymerization led to the emergence of a new direction in macromolecular chemistry, namely, the study of asymmetric synthesis of macromolecules and many properties of optically active polymers. Interest in these studies is related, first of all, to the possibility of employing asymmetric polymerization for a more detailed understanding of the mechanism of stereoregulation. Among all the spectral characteristics, optical rotation is the most sensitive to configuration changes, and this opens up new approaches toward the use of an optical "marker" in the studies of mechanisms of many polymerization processes.

Synthesis of optically active macromolecules is closely related to the solution of problems regarding the preparation of physiologically active polymers

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USSR

BURTNIYETSE, N., Editor, Fiziologicheskii i Opticheskii Aktivnyi Polimernyye Veshchestva. Trudy Vtorogo Vsesoyuznogo Simpoziuma po Khimii i Fiziko-Khimii Fiziologicheskii i Opticheskii Aktivnykh Polimernykh Veshchestv, Riga, "Zinatne," 1971, 215 pp

compounds with predetermined activities. Therefore, the attention of scientists in many countries to issues, where the problems of fine organic synthesis interweave with those of physics and chemistry of polymers, biochemistry, biology, and medicine is understandable.

The papers published in this book were presented at the Second All-Union Symposium on Physiologically and Optically Active Polymers, held in Riga, in 1969. They contain new experimental data and interpretation of obtained results, which in our opinion will be of interest to many chemists and physical chemists working in different fields of science dealing with polymers.

Contents:

Plate, N. A., Davydova, S. L., Aliyeva, Ye. D., and Kargin, V. A.,  
"Synthesis of Optically Active Polymers by Asymmetric Induction  
in Macromolecule Chains"

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